

Inside

Paradise Regained? Karen Gold has visited the once troubled POLYTECHNIC OF NORTH LONDON to discover whether it has successfully overcome its vulnerable reputation as a radical stronghold (page 11)

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Efficiency measures: Geoffrey Lockwood, a member of the JARRATT steering group, describes how their controversial report on university efficiency came to be written and argues that universities will ignore its sombre message at their peril (page 15)



ARTIFICIAL INTELLIGENCE: Stuart Sutherland reviews a new American book about AI, that attempt to take the mystery out of intelligence that has mainly served to demonstrate the mystery of common sense (page 16)

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Retreat from Rambo

When the Jarratt report on university efficiency was first published almost a year ago it provoked one of two reactions. The first was the complacent view that universities were already putting into practice many of the report's recommendations. The second was the exaggerated fear that Jarratt heralded the arrival of Rambo-style university government. Today the first reaction has been modified - although the complacency has not disappeared completely there is now a widespread belief in universities that Jarratt offers a valuable guide to good management practice - and the second has mellowed - root-and-branch hostility to Jarratt is now much rarer.

One reason for this change is that the members of the steering group have worked hard to dispel what they regard as rather hysterical mis- or at any rate over-interpretations of the message of the report. Sir Alex Jarratt himself has taken more than one opportunity to distance his report from the Government's born-again enthusiasm for efficiency by pointing out that its message to ministers is every bit as tough as to universities. Another example of this attempt to re-educate university opinion is the article on page 15 by another member of the steering group, Dr Geoffrey Lockwood, registrar of Sussex University. Dr Lockwood does not try to minimize the managerial challenge facing universities, nor the political challenge that lurks behind it. But he does try, maybe successfully, to make Jarratt seem less of a threat.

But perhaps a more important reason is that the simple lapse of time has weakened its disastrous association with earlier Government "efficiency studies". For this identification guaranteed the report a hostile reception. After all the growth of "efficiency studies" after the Conservative victory of 1979 was built on the belief that something was rotten in the bureaucratic state of Whitehall and that extraordinary or even punitive measures were required to impose efficient practice. In the eyes of many people the Jarratt inquiry, although established by the vice-chancellors' committee, was seen in the same threatening context.

Maybe as a result Jarratt failed to secure a fair hearing on its immediate publication. Because of its assumed origins the report could not be regarded as just the latest, although maybe decisive, episode in the long managerial revolution that has been under way in universities since at least the 1960s. Its status as an "efficiency study" required Jarratt to be seen as a radical break with the past. Nor could the exercise be regarded as the next stage in the universities' managerial response to the enforced austerity of the 1980s. The orthodox view after all was that "efficiency studies" were about savings not cuts, a semantic distinction of crucial political significance.

Ten months on Jarratt seems a little less oppressed by this involuntary political overlay. In Whitehall itself less is heard of "efficiency studies",

while the son-of-Jarratt inquiry into polytechnic and college efficiency being undertaken by the National Advisory Body seems to be a much less politicized exercise. Although it is still unwise to ignore the political overlay on Jarratt, it has become possible for its recommendations to be discussed more dispassionately. The political heat has begun to go out of university efficiency.

Of course this does not mean that now universities should embrace the Jarratt future with uncritical enthusiasm. The report makes some good recommendations - a review of the University Grants Committee (already in hand), extended planning horizons (more desirable but also more unattainable than ever), fewer committees, devolution of decisions to administrators, and so on - but its general approach to university management is flawed. For Jarratt prefers an industrial rather than a Civil Service model for the effective bureaucratic organization of universities, a popular preference among today's politicians. Some of those closely associated with the committee, including Sir Alex himself, have denied that the report holds up industrial organization as a model. Yet its key proposals can be boiled down to more effective "top management" and more disciplined "line management" accountable to these university leaders. Little weight is attached to academic democracy. What Jarratt proposes is a top-down structure of university government.

The first proposal is more acceptable than the second. Universities need more effective top management, although some would not doubt argue that they had acquired this the hard way as they struggled to cope with the 1981 cuts. The argument with Jarratt here is about means not ends. Will strengthening councils, establishing tightly knit planning and resources committees, putting senators in their place, and designating vice chancellors as chief executives actually produce more effective top management? Maybe such an upheaval at the top of British universities is now inevitable. But the magnitude of the change, and so of the likely resistance to it, need to be recognized. The old pattern of university government - council as the dignified guarantor of institutional integrity, senate as the academic parliament, vice chancellor as a consensual leader, all served by a neutral Civil Service-style administration - is to be turned upside down.

But the real objection to Jarratt concerns its proposal to create a more disciplined line management by turning academic departments into subordinate sub-units. For this would be the effect of having heads of department appointed from on high and treated as line managers, rather than as the leading representatives of their disciplinary or professional peers (whether by academic eminence, election or rotation). Here Jarratt seems to ignore the essence of university departments; they are not only sub-units in the "visible college" of their institu-

tion but also local branches of the "invisible college" of their discipline. If the Jarratt committee had not concentrated so myopically on universities it might have reached different conclusions about the organizational pattern best designed to produce efficiency. For example, the pattern of polytechnic government is fairly close to the Jarratt model; governing bodies are more powerful than academic boards, directorates form credible top management teams, heads of department are appointed as line managers, and so on. Yet are polytechnics more efficiently run than universities? And why in many polytechnics is there an irresistible drift towards more of a university pattern of government, largely on the grounds that academic maturity requires a measure of co-ordination not available under a centralized and hierarchical regime?

Another parallel which Jarratt should have considered was the Griffiths report on health service management which called for the appointment of "general managers" in regional and district health authorities. The indifferent benefits produced by this policy demonstrate the dangers of overriding the claims of professional (or, for that matter, academic) freedom in the cause of cleaner management. Of course the National Health Service, like universities, is a complex bureaucracy that must be managed with the maximum efficiency but its management must be in harmony with its professional culture. Perhaps the Jarratt committee would have produced a more sensitive report if its members had considered more carefully this non-university experience.

Certainly, the committee does not seem to have given serious consideration to the alternative model, that of Civil Service government. This would have involved the building up of a cadre of self-reliant, competent and respected administrators, already possessed by universities in great measure. Such people would have been able to provide the managerial backbone which universities certainly need while preserving a professional mentality. A Civil Service model would not require the categorical subordination of senates to councils demanded by Jarratt. It would not require the redelegation (and retraining?) of heads of department as line managers. Above all a Civil Service model would depoliticize the great issue of university efficiency.

Rambo mania has swept America. It has filled an awful lot of cinema seats in Britain as well. But the terrible simplicity of can-do management has no place in higher education, not because universities have any right to be treated as protected ground but because the character of management has to reflect the culture of the enterprise that is to be managed. If it does not it produces not efficiency but dissonance. Second thoughts on Jarratt are certainly more hopeful and more mellow, but it is still very difficult to endorse unreservedly the Jarratt message.

Summit on the switch

Mrs Margaret Thatcher held another summit-seminar at 10 Downing Street on Monday. On this occasion the subject discussed by the Prime Minister and the 30 invited academics and industrialists was the Government's attempt to increase the supply of engineers and other technologists, the so-called "switch" initiative. These summit-seminars are a useful device, although one that many people would have associated more readily with Lord Wilson than Mrs Thatcher. Clearly they have a propaganda value for the Government (and an earlier seminar on crime prevention at the height of the Westland affair even provided an incredibly convenient alibi), but they also have the more positive value of focusing public attention on familiar but important issues and of integrating the sometimes disparate approaches of different departments to these common problems. So

they provide modern government with a much needed interdisciplinary.

Monday's Downing Street meeting therefore was a useful occasion. At a time when relations between higher education and also large parts of manufacturing industry, and the Government are marked by antagonism, any evidence of a more positive and purposeful relationship has to be welcomed. The switch initiative offers such evidence. Here higher education, industry and the Government seem at least to be talking a common language even if they disagree on details.

But the format of these Downing Street summits has two grave drawbacks, both apparent on Monday. First, because the intention is to emphasize or even celebrate existing government policies, there is little room for critical evaluation. Yet such evaluation is certainly necessary with

the switch. The response of industry has been disappointing, barely half the not especially generous sum allocated by the Government, while the dissonance and disturbance in the rest of higher education have not been properly assessed.

Second, prime ministerial summits operate inevitably at a level of high generality. The points of agreement that emerged from Monday's meeting demonstrate this. It is hardly radical, or even original, to call for more general and more practical engineering degrees, or to moan about the shortage of competent mathematics and science teachers in schools, or to extol the need for professional updating. The problems are well understood. It is the solutions that remain obscure. And those solutions can only be clarified by detailed policies properly evaluated not by general rhetoric uncritically admired.

Laurie Taylor



Oh fatal vision! I see thee still.

Professor Lapping. Do lie back. We really can't start until you relax a little. There. It is here again. I see it now.

What can you see? Oh horrible! Most horrible!

Force yourself to look. What do you see? My seminar room. Empty. The room is empty.

It is? No students anywhere. I look outside. None in the corridor or library or coffee bar.

Yes. What else? See where Doctor Quillock stands before me. So pale and drawn. He speaks.

Go on, Professor Lapping. We does he say?

He says: "The students are a gone. They have been taken. In the dead of night a raiding party from the UGC and CVC pilfered them into black dustbins and carried them away to the forlorn compound outside Newton Keynes". Oh God!

You see the compound? I see it now. Look there. The gates. The barbed wire. The declaring this is the New University of Swotting. And behind the gates, my own students. Kettleby, Trotter, Dyson. Oh Horror!

What now, Professor Lapping? Can't you see? There are no members of the AUT. Not an AUT member to be seen. The students are being taught by...

Yes, yes? By electricians. There's nothing but technology here. No seminars or tutorials. Only keyboards and terminals and VDUs. And no... can't face it!

Face it, Professor Lapping. Face it.

Look there. The new graduates. Taught in three weeks instead of three years. Then tied up in bundles and taken out in lorries for overnight doorstep delivery to IBM and British Telecom and ICI. Aaargh. Aaargh.

Professor Lapping. You mustn't calm yourself. The diagnosis is quite straightforward. These hallucinations are nothing but a flight from reality - a refusal to face up to the real difficulties of the present facing universities by the substitution of images taken from a wholly different world. We will meet again next week at the same time. Nurse, will you show Professor Lapping out. And nurse. Yes sir?

Tell Mrs Warwick I'm ready when she now.

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Companies woo graduates with signing-on fees

by Felicity Jones

Widespread shortages of graduates are becoming so acute that employers are resorting to "signing-on fees" to attract high fliers to their companies, according to a report published this week. With vacancies for graduates up by 50 per cent or more, the large electronics firms have been unable to find candidates of the quality they want. And competition is just as intense now in banking and retailing.

The report, by Mr Richard Pearson, associate director of the Institute of Manpower Studies, predicts that shortages of information technology graduates will continue and that, barring a major economic reverse, demand in all subjects will carry on growing.

High-fliers have been in short supply since 1983, the reports says. They were being sought to meet long-term needs for senior management and these jobs were affected least by the recession. The shortage was compounded by the upturn in the graduate employment market and now a premium was being placed on talented generalists.



The UGC under scrutiny, 12-13

Medical standards in danger, says London

by David Jobbins

Standards of medical education are in danger of falling below acceptable levels, London University has warned the General Medical Council.

In a confidential report to the GMC's education committee the university warns: "The combination of the cuts in University Grants Committee and National Health Service funding imperils the ability of this university's medical schools to provide education of the standard required by the GMC."

It says that despite steps including a substantial reorganization of its medical

schools, introduction of new teaching technology and a greater role in undergraduate teaching by the post-graduate units, research is already being sacrificed to protect patient care.

In the face of projected additional cuts it is difficult to see what further measures are open to the university to maintain the standard of its medical education," it adds.

Protection of medical schools at the expense of other disciplines is not feasible while Government policy is to select to science and engineering, and selective funding of research means that universities who choose to protect

Dramatic drop in trainee teachers

by Patricia Santinelli

Applications to all postgraduate teacher training courses have decreased dramatically compared with last year. Latest figures indicate a fall of 15 per cent.

The position for Bachelor of Education courses is slightly less bleak, but nevertheless worrying. For the first time in five years there has been a drop in applications, some 4 per cent on last year, or 400 fewer applicants. The BED physics courses which attracted only one applicant for the 24 places available last year is doing slightly better this year with six applications.

The Graduate Teacher Training Registry says that the decrease in PGCE applications - around 12,800 compared to 15,100 for the same period last year - is extremely serious, since applications for 1985 were the lowest for five years, and the latest fall includes popular subjects such as English and history.

The main decrease is in applications

to secondary training, 23 per cent down on 1985, while the decrease for primary training is only 1.75 per cent. This however, should be seen in the context of an increased allocation of primary places to meet additional demand in schools.

Colonel John Massey, head of the Graduate Teacher Training Registry says they have been told that young people are being positively discouraged to join the profession, particularly in these schools particularly badly affected by the teachers' dispute.

The registry is very concerned that the decrease in applications now includes the popular subjects such as history and English, and is no longer just concentrated on the traditional shortage areas of maths, physics, and craft design and technology.

Last year there were 941 PGCE history applications, this year there are some 756. English applications are down by about 200.

The picture for maths is worse than last year. The registry still has not

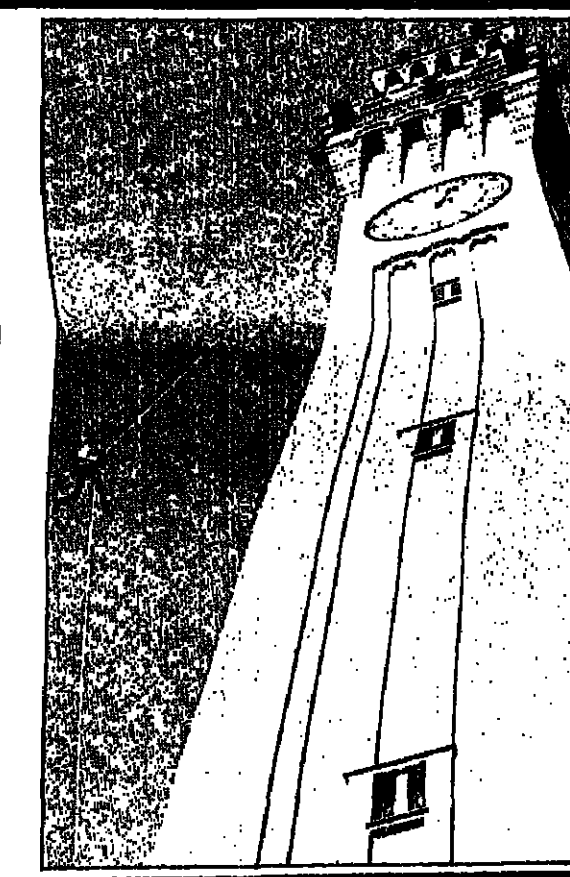
registered as many applicants as there are PGCE vacancies. Last year recruitment reached only two thirds of the requirement. So far this year applicants are down by 200 or some 25 per cent.

In the BED, the drop in applications has come mainly from men, 8 per cent fewer than applied last year, the comparable figure for women is 3 per cent.

Here the drop in applications has been fairly selective, with continued problems in traditional subjects such as home economics, but also in unexpected subjects such as physical education and movement studies which is down by 300. Last year there were some 1,354 applicants, this year there are some 1,059. Applications for PGCE PE have fallen by 100.

Colonel Massey stresses that the picture may change because there is still time to register for courses, and institutions are still considering applications.

Students in action: Birmingham University students demonstrated their abseiling skills by descending the face of the university's 100 metre high Chamberlain clock tower, raising £4,500 for Third World charities, while 30,000 students demonstrated on a National Union of Students' London march against the Government's proposed cuts in welfare benefits and student grants.



UGC's overwork delays merger

by Peter Aspdren

Plans to merge Keele University with North Staffordshire Polytechnic are being put on ice because of the inability of the University Grants Committee to cope with the work involved.

The university's senate has already approved in principle the merger proposal, which would lead to the creation of a new University of Staffordshire. The plan was due to be further discussed by the university council but the vice chancellor, Professor Brian Fender, has told members that it would not be practicable to discuss the matter further, while the UGC is so heavily preoccupied.

Following talks with the UGC and the Department of Education and Science, Professor Fender said this week: "It is evident that the UGC, because of its heavy planning programme, at present which involves every university in the country, is unable to give detailed consideration to the implications of the proposed University of Staffordshire until late in the summer."

The latest twist in the merger saga shows the extent to which the UGC's research exercise is dominating its time.

Language teaching collapse 'damaging national interest'

by Ngaio Crequer

Britain's commercial, diplomatic and academic needs are being gravely damaged by the virtual collapse of a national system for teaching Asian and African languages, a confidential report by Sir Peter Parker has concluded.

Sir Peter, former chairman of British Rail, says the situation is more disturbing than anyone could have anticipated and calls for urgent Government action to preserve the linguistic

and related assets so important for the national interest. His report, *Speaking for the future: a Review of the Requirements for Asian and African Languages and Area Studies*, was commissioned by the University Grants Committee with the encouragement of the Department of Education and Science and the Foreign Office. Sir Peter took over the inquiry from Sir James Craig.

He says the system is "uneven, with hidden weakness where there is apparent strength, under-thin provision elsewhere and the disappearance altogether in recent years of provision in African and some other languages. From the national point of view this amounts to consigning whole areas of the world to a linguistic and informational vacuum."

Ironically, he says, the erosion has taken place when university provision has been more necessary because expatriate expertise has dried up. He

continued on page 3.



John Graham was the producer and director of the last four programmes I have made for the BBC. One was a film about Cuthbert Brodribb, the extraordinary architect of Leeds town hall, the paradigm of municipal architecture which has influenced council buildings all over the world ever since.

The other three were a critical study of what has happened to our towns and cities since the war; that went out under the title *The Flight from Utopia* (given to it by John Graham himself). It was while filming in Oxford for the first time that he had the first warning of serious illness. He died last month aged 43.

I have enough experience of making programmes about architecture to know that it is an exceedingly difficult subject. Unless they are falling down, buildings don't move; but producers usually want everything to move, so you can find yourself wandering aimlessly about apparently talking to nobody.

John found all sorts of devices to get round the problem, made all the worse for us because I cannot walk around nowadays without falling over.

How fortunate, I thought, that he was such a very intelligent man. He had graduated in English and law from Hull University and had also been a student leader. That may sound depressing, but in practice it meant that he had had ample experience of dealing with difficult people.

He worked as a reporter for the *Daily Sketch* and a sub-editor on the *Yorkshire Post* and joined the BBC in 1970 as a journalist, moving after a few years into production.

It may not be obvious to the viewer who sees only the finished product, but making films is both an emotionally draining experience and an occasion for the wildest hilarity.

Perhaps the two aspects are ultimately the same; certainly it is difficult afterwards to separate the jokes from the solemnity.

I doubt if you can make lively programmes without a sense of humour. You must at least assume that while other people seem absurd you must yourself seem even worse. Working with John Graham was a constant lesson and delight.

That leads me to comment on the most extended series of programmes about modern architecture ever made by the BBC - *Architecture at the Crossroads*, written and produced by Peter Adams.

It is a measure of the recovery of modern architecture in the eyes of the public that 10 programmes can be made at all about the contemporary scene. The photography is admirable. Spectacular new buildings are found not only in the United States (and not only in Dallas) but in the Far and Middle East, especially Islamic.

They are high and low, big and small, or traditional materials as well as shiny modern artificial ones. They make most of our local scene seem poverty stricken - which it is.

It is therefore all the more irritating that so far the programme has been totally devoid of intellectual content. The commentaries are shapeless, flat and mundane.

Anything said by an architect left unchallenged, even when it is the most fatuous poppycock. And the argument is inconsistent and contradictory when it is meaningful at all. It is a producer's programme without serious analytical input.

If *Civilization* had been made by someone who knew nothing about the history of art, it would have had the same effect - exasperation for anyone who knows the subject, visual dilution for anyone who does not.

Patrick Nuttergens

letters to the editor

Who benefits from job adverts?

Sir, - I would be grateful for information as to who exactly benefits from the requirement on organizations to advertise every staff vacancy, even when they have no intention of following this through by drawing up a fair short list of candidates and conducting a proper interview?

Last November I applied for a part-time post for which I confidently believed, rightly or wrongly, that I had the qualifications and experience to merit at least an interview. Four weeks after submitting my application I had received nothing but a bare acknowledgement. I rang up the personnel officer. In a tone that skillfully com-

bined dismissiveness with evasion, she told me that a short list had not yet been drawn up and she could not tell me when it would be. She had no means of knowing who among all the potential applicants I was, but it was clearly of no account to her that I might in the meantime find another post. The other day, approximately three months after submitting my application, I received a letter regretting to inform me that it had not been successful.

I was taken aback at not even having made an interview, until I read the following sentence more carefully: "The decision to appoint another candidate on this occasion is, of

course, without prejudice to any application you might wish to make for a similar post in the future." I assume, therefore, that no short list was ever drawn up, nor any interviews ever called.

No doubt the best person for the post has been appointed. No doubt this is quite legal. One is, however, left with more than an obscure sense of having been made a fool of, of having marshalled one's CV and referees in vain. Justice may have been done, but it has not been either seen or felt to be done.

NAME AND ADDRESS SUPPLIED.

Media research

Sir, - A whining reply to my from spokesmen for the Media Group was predictable. Letters, February 28). It is part of the group's strategy, the have had to become so fabricating defences against reviews.

However, I was intrigued by suggestion that if ITN "invited" senior and subsequently bought copies of it, this undermined its credibility. Obviously, the group have covered a whole new area of research. One wonders what other research has been undertaken at the university, whom who has purchased it and many copies they bought; and this does to its credibility.

Yours "darkly",
P. A. J. WADDINGTON,
University of Reading.

Tribunal

Sir, - May I through your column correct an error which occurred in David Jobbins' report of the sex discrimination case in which I was represented (THESE, February 21). In his report he states that the tribunal found that the appointment was not in any way discriminatory. In fact, the tribunal found that the appointment was discriminatory on the grounds of sex. There were other aspects of the appointment procedure which the tribunal panel "some deep" (their words).

Yours faithfully,
P. J. HARRIS,
South Glamorgan Institute of Higher Education.

PR exercise

Sir, - I only wish it were true that the Committee of Directors of Polytechnics has received an additional £60,000 for its public relations work. (AntiTHESE, February 21). This is a fragment of someone's imagination. What AntiTHESE is correct in predicting savings of this size from a scheme for pooling the distribution of prospectuses will not be known until it has been adopted and is working.

Yours sincerely,
DR M. S. LEWIS,
Secretary,
Committee of Directors of Polytechnics.



A polytechnic library: the shelves are full of books

Book shortages

Sir, - The National Book League has sent me a copy of the report on Spending in University & Libraries referred to in your headline "libraries empty in resources crisis" (THESE, February 21). The report is accompanied by a circulated letter from the Publishers Association, asking librarians to ensure that the "decline (in resources) is reversed". You say that

the Centre for Library Management again reports rising book prices.

Yet our library bookshelves are not empty. In all "academic" (and other publicly financed) libraries there are always more books on the shelves than are out on loan or in use. At the same time, the capacity of the human mind to read and absorb the contents of books does not seem to increase greatly. Is the increase in prices any greater than the increase in salaries? So is there really a book shortage? Has anyone

established the degree of academic need which justifies any particular book purchase? I suggest that the cause of education could be better served if we established more adequate criteria for purchases than the present unhelpful alliance between library and academic expansion, and commercial interests.

Yours faithfully,
R. MOSS,
Chief Librarian,
Teesside Polytechnic.

Augusta Ada

Sir, - Anthony Hyman's review of my book, *Ada: a life and a legacy* (THESE, February 21) is characterized by its use of loaded and dismissive terms, such as "naïve", "inaccurate" and "amateurish", but is supported by little evidence or argument. They are all highly subjective judgements, but it is beyond me how anyone could construe the book as "a defence of Lady Noel Byron".

It may be "naïve", but a writer often assumes that most potential readers know less about the subject than she does, and would therefore appreciate clear and simple summaries of necessary background material, which I suppose could be labelled "amateurish" if one were so pejoratively inclined. (But what is so good about professionalism if self-declared professionals can behave as petulantly and childishly as does Hyman in this instance?) In any case, I expect to receive royalties for my book just as he does for his. Thus, the "clitche" about the position of women in early 19th century society were "retailed" in order to

appreciate the often unusual, unconventional and even daring behaviour or opinions of Ada, Lady Byron, Mary Somerville and Harriet Martineau.

The tired rule that references should be restated in connection with the rediscovery that many scholars do not do so, and, in particular, that Hyman had relied on Doris Langley Moore for certain statements, could have been checked (and falsified) against sources that were freely available to him. (The suggestion that his venom against my book and against me personally might stem partly from this cause hardly needs retelling.)

It is possible that my account of Ada's upbringing and her meeting with Mary Somerville contains inaccuracies. To retail another truism, so does every book purporting to be factual; Hyman's biography of Babbage contains a number. (The caption under the picture of Ada accompanying his review is also "inaccurate": Ada's name was Augusta Ada, not Augusta.) But so what? The evidence for all my important statements, and most of the unimportant ones, is clearly indicated and discussed. Ada's attempted elopement - she ran away from her mother's house to that of her lover - is taken from a memoir by her confidant, which is extensively quoted. The possibility that she suffered from porphyria is presented and discussed, with all its problems, as just that: one among several possible explanations of her mysterious illness that absorbed so much of her time, attention and effort in attempting to fathom.

As to Hyman's assertion that it is futile to try to distinguish Ada's and Babbage's contributions to the Notes, other than the technical content, again I am puzzled. With the aid of contemporary correspondence, and Babbage's and Ada's other writings, I have tried to do just that, and at some length. The extent of my success should be a matter for discussion and debate, rather than rejection out of hand. Hyman says that "the Analytical

Engine weaves algebraical patterns in a precise statement. It is nice to hear what his idea of precision is. But I am curious that, as a specialist in Babbage's work as a computer pioneer, he avoids my contention that, despite claims Babbage encouraged Ada to make, the Analytical Engine would have been incapable of algebraic calculation and Babbage never solved the problem of making it so. I make the claim quite clearly. Whether it is correct or not might be subject to debate, but Hyman simply calls it "confused".

At the risk of once more betraying my naivety, I must admit that I found it difficult to respond to Hyman's attack, not because it has hurt me - it does not - but because it is depressing. In approaching Hyman in approaching others in a similar way to my work, I went equipped with material I thought would be of use to him. This he accepted willingly, otherwise he would not have written what meant that I had to communicate his published work in print. I did not of course, expect to be admitted to the fellowship of Magdalen, or any such boys' club, but I had hoped to be able to discuss and debate matters of mutual interest in an atmosphere of review is totally unwarranted.

Yours faithfully,
DOROTHY STEIN,
37 Pearman Street,
London SE1.

Letters for publication should be sent to the editor, The Times Higher Education Supplement, 1, Abchurch Lane, London EC4N 3DF. They should be short and to the point, and written in a clear, concise style. The editor reserves the right to cut or amend letters.

Sir Keith's olive branch to NAB

by John O'Leary

Sir Keith Joseph, Secretary of State for Education and Science, made his first visit to the National Advisory Body last week and initiated new moves to patch up relations between the organization and his department.

At a meeting of the NAB committee, he offered fresh talks between his officials and the NAB secretariat aimed at reaching agreement on the scale of the cuts required in 1987/88. The Department of Education and Science is still contesting the body's demand that 3 per cent cuts will be needed even if Sir Keith adds another £23 million to the expected budget for polytechnics and colleges.

Sir Keith gave no indication that money would be available if the two sets of officials found that the NAB's figures were correct. And he

again insisted that the Government would not provide extra funds to meet the full cost of the lecturers' pay award since it breached spending limits.

However, his approach to the local authority members of the committee, with whom he had sharp exchanges before Christmas, was generally conciliatory.

The talks will come too late to affect the NAB officials' initial proposals for student numbers in 1987/88. Work on detailed allocations is too far advanced for amendment before the proposals go out on April 4. Any alteration would have to be fed into the planning exercise at a later stage, together with the impact of the DES decisions on teacher training allocations.

At the meeting, the committee accepted the NAB board's recommendations that the exercise should



Sir Keith Joseph: new moves

proceed on the assumption that almost 10,000 places should be removed from polytechnics and colleges in order to preserve current funding levels.

It was also agreed that there should be three groups of subjects each taking a different level of cut. The least protected subjects (art, humanities, performing arts, and social and administrative studies) would be cut by 16 per cent, while a middle group would take a cut of 11 per cent, and the remaining 10 programmes less than 6 per cent.

The NAB committee lent its support to the establishment of a national planning body for public sector higher education in Scotland, as proposed by the Scottish Tertiary Education Advisory Council. But it made no comment on STEAC's recommendation that such a body should incorporate the universities at a later date.

Row over loss of Larkin's library

The row over a plan to cut the size of Hull University's library, turning part of it into a centre for the department of education, is gathering force, with bitter accusations and campaign flysheets following each other round campus as academics rally support for their side of the argument.

The university's accommodation committee wants to transfer the use of part of the library to save money and to bring the education department into one building.

But the move - which would result in the loss of 4,000 metres of shelving and up to a third of seating places - has been condemned as a "mutilation" of one of the university's chief assets.

The allegation came from Professor John Saville, Emeritus professor of economic and social history, who said the university would lose its claim as a centre of excellence if the plans went ahead.

He also said the proposals would not have emerged if the former librarian, the poet Philip Larkin, had still been alive. "The university claims it did not consult him at the end of last year because he was seriously ill."

"That might be true, but I don't think he would have stood for this. The think which has really shocked people is that they have gone ahead with the plan before he was cold in his grave."

The library management team is also protesting against the plan, claiming that the move might lead to transferring stock to closed access areas and disposal of stock after a few years.

But the accommodation committee has defended its decision, saying that fears that valuable books were about to be lost were "misplaced". It has also pointed out that the library was deemed adequate for a university of 11,000 students, whereas Hull received the resources of a university of 4,300 students.

Professor Saville said the university had not seriously explored alternative options. "Whatever changes one envisages, a smaller and less well-organized library does not offer a sensible solution," he said in a memorandum to all academic staff.

Languages warning

continued from front page

brink of extinction. It only survived at Cambridge because of the extraordinary efforts of a former British ambassador.

Britain has six institutions teaching Chinese, compared with 20 in the Federal Republic of Germany, and more than 100 in the United States. There are a tiny number of students learning Korean but no research is being done. Mongolian can no longer be offered. South East Asian languages are at crisis point.

Sir Peter makes a number of recommendations including doubling the number of student places in languages of considerable political and commercial significance (such as Arabic, Chinese and Japanese), and increasing or maintaining provision elsewhere.

He calls for more optional languages courses in science or business degrees.

Poly masters overseas degrees

by Karen Gold

Middlesex Polytechnic is considering awarding its own degrees by validating courses for overseas students in their own countries. The polytechnic's academic council has agreed the principle of awarding a "Middlesex Master of Business Administration" in Malaysia.

The proposal goes to the polytechnic's academic board later this month. It would give Middlesex the same relationship with Malaysian students as the polytechnic's own students now have with the Council for National Academic Awards.

The MBA would be run by a management training company in Malaysia. Its course teaching and staff would be monitored by Middlesex on a consultancy basis, and the polytechnic

might also provide some teaching in key areas. Middlesex would be involved in student assessment, and its academic board would be the guarantor that the MBA was of equivalent standard to the MBA awarded at Middlesex by the CNA.

The academic board will be asked to agree the general principle of Middlesex awarding its own degrees overseas, rather than just the arrangements for this one, according to the head of the polytechnic's school of organization and management Dr Bernard James.

The CNA has said it could not be involved in such a scheme, because its charter makes it responsible only for United Kingdom awards. The polytechnic would receive fees for students as the CNA does, but its

intention in acting as consultant was one of helping developing countries to establish their own courses rather than to increase the polytechnic's income, according to Dr James.

Middlesex has previously had inconclusive discussions about awarding its own degrees - and adopting the title "university". Although both are normally associated with the possession of a royal charter, neither is illegal without one.

Trent Polytechnic is considering a system of targets and incentives for departments in order to increase its overseas student numbers. Plans being considered by heads of department include empowering polytechnic staff on recruitment visits to make provisional offers of places to would-be students on the spot.

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DON'S DIARY

MONDAY

At least they do not call it the "spring" term here. I scrape the ice off the car for the drive into St Andrews. An army of workmen clear the lane to where we are staying - there is a primary school behind our house - otherwise the hill out of the six-housed hamlet would be impossible.

Arrive at office at 9 (almost). The department has come alive for term, people everywhere except only two first-years appear for a tutorial group of four at 10 o'clock. Despatch the two with their exam scripts from Christmas and finish preparation for lecture at 12. Good-sized audience for the first day, and Theories of Meaning get off to a not-too-hostile start. After lecture, spend time with promising finalist arranging term's tutorials.

TUESDAY

Get a quick haircut and then look after second son while wife takes baby to clinic for hearing test: nurses making noises out of baby's line of sight to see if she turns to the sound. They attempted test last month but three-year-old kept making "noises off" and distracting the baby so test failed! Consider taking son into work to play while I put reading lists on the word processor, but decide that his destructive capabilities in the presence of the processor outweigh my constructive ones. We watch *Play-school* at brother-in-law's flat.

WEDNESDAY

My wife's turn for the car. I shall cycle to work. I carry the bike up steps cut into hillside to avoid a ride around the hill which separates me from St Andrews. It is then a seven-mile ride.

8:30: leave home. There is light sleet. 8:40: it is snowing heavily. Reach top of steps and after 10 minutes' cycling have no more hills to climb. Turn down offer of lift from GP.

In the close Fife community in which we find ourselves, the local GP is as much a friend as an official. This is but one element of the cultural shock we have encountered on coming to this part of the world.

00: struggling in a manner which does not baffle my usual cycling style, but then I have not ridden to work since last term. 9:15: arrive at office damp but victorious over the weather gods. The ride normally takes 35 minutes.

Spend morning seeing more first-years and arranging tutorials. Try to be very casual about the formal logic course that is now starting. Finish lecture for first meeting with second-years on Friday. Achieve an hour on the processor before sandwiches, doing deep thoughts for paper to be read in Glasgow in four weeks. Eat sandwiches re-reading colleague's paper for joint seminar on philosophy of language at 2pm.

4.15: emergency phone call. Transformer at local sub-station blown. Family to St Andrews for supper. Back home to paraffin storm lamps, no heating or hot water. Still whisky to keep out the cold and bed early.

THURSDAY

Power back sometime in early hours. Spend two hours re-lighting solid fuel boiler (electric fan keeps furnace alight). Delicate operation enticing anthracite to burn but it works first attempt and so into office by 11. More lecture preparation for next honours class on Meaning. As this is my first lecturing position, I have to make-up the courses as I go along and sometimes seem to do nothing else.

Agonize over the strike for next Wednesday. I am due to meet my first-year logic class for their first session that morning. Conscience pricks. I prick back, some stand is required.

Resolve conflict of individual versus collective responsibilities. I shall strike. By afternoon, lecture course on Meaning looking in good shape and sneak down to processor room for more deep thoughts. Am sure my productivity has increased since getting access to this hardware and so far quality seems undisturbed.

FRIDAY

A normal day? Give lift to colleague from science faculty, compare notes on impending strike. He guesses it will not be well supported in St Andrews. It is that kind of place. Our local executive have still not officially informed us about it.

Complete forms for British Lending Library register of research in the humanities. I have never seen this register. Why anyone see my entries? Put down 1986 for completion date for my monograph on socialism. Is this too optimistic? - although in terms of my contract the manuscript is already 12 months overdue.

Pick up paper I have to review for journal edited from department. Put it down again. This is my first go at reviewing and it will require a more concerted effort than I feel ready for. Noon: my class overflows for second lecture on Meaning and I run out of reading lists. A colleague decides to sit in, but I suffer only a momentary paralysis. Sandwiches at 11.5 and update diary.

2pm: receive official notification of strike, give first second-year lecture. Seven out of 11 turn up and I take them through the early stages of Russell's theory of descriptions. Have never met them before. Try to emulate Laurie Taylor's *THES* column or is he closer to the truth on these matters than I had thought? We vote to send a copy of *THES* peer review to principal and dean for, although we disagreed with the enterprise (Logic and Metaphysics were not asked for a response). St Andrews came off very well. We need the praise.

SATURDAY

En famille to Kirkcaldy to raid the nearest decent record library ("decent" equals less reasonable blues and jazz section). Do Saturday things like shopping. Will never forget the first time we left the house to shop at nearest urban centre - Dundee.

Feeling of elation at seeing civilization again: bus fumes, hordes of people, large stores. We are city dwellers. We miss Oxford. We miss being able to walk to the corner shop at 10pm for a bar of chocolate. The simple pleasures have to be planned in the country.

SUNDAY

Metabolism slows down. Paper comes at 11 (we have a rota in the hamlet for collecting Sunday papers). Before lunch walk in the woods behind the house. Visit what we think to be a badger set. It is inhabited. Perhaps in the spring will spend a night or two trying to get a photo.

Amble home. There is no doubt that when spring makes it this will be a beautiful place. Be fair, it is an idyllic place. Indeed, we could not ask for a finer country setting than our small corner of Fife. But its utter silence and beauty will mean more to us later when we are gone.

Michael Luntley

The author is a temporary lecturer in the department of logic and metaphysics, St Andrews University.



Flying pioneers: these three Oxford University students are to be the first women flying members of Oxford University Air Squadron. From the left are Joanne Ward, Susan Timm and Karen James.

Overseas recruiting campaign urged

by David Jobbins

Government departments are to consider ways of encouraging universities, polytechnics and colleges to be more active in recruiting overseas students.

An internal review of existing schemes to attract them claims that countries which historically sent students to the UK are still doing so despite the imposition of full-cost fees.

But it acknowledges that although the schemes are in line with foreign policy priorities, they are not enough to satisfy increasing demand and that British institutions are competitively placed to attract more.

The study, carried out by an international group of officials concerned with overseas students, says that the battery of Government and British Council schemes direct resources primarily to the most important countries but that many smaller nations are also covered.

A total of 161 countries are covered by award schemes, with 17,400 students and trainees given support in 1984/85 at a cost of £73 million.

Nearly 12,000 students were from Commonwealth countries, receiving £51 million of the total. The largest recipients of aid were Hong Kong, Malaysia and Nigeria, with 15 out of the 19 countries sending more than 250

students Commonwealth members.

But the report came under fire at a meeting of the "round table" which brings together Government departments, aid agencies and institutions.

Ministers and officials were left in no doubt that there is still a high level of resentment in the Commonwealth at the imposition of full-cost fees which its targeted schemes had not dissipated.

And doubts were raised over the statistical approach used in the review. An issue made more acute in the eyes of aid agencies who understand it is to be circulated to MPs.

Ms Gail Taylor, executive secretary of the UK Council for Overseas Student Affairs said: "The difficulties of collecting accurate data on overseas students are well known and no one could expect a first review of this kind to contain infallible statistics. However, data which is confusing and inconsistent should not form the basis of conclusions which are presented as the result of the consideration of absolutes."

One principle objection is that the historical analysis of main sending countries illustrates only the pattern for those countries currently in the top 10 senders.

Lecturer fights dismissal

by Peter Aspden

A lecturer who was dismissed from post at St Mary's Hospital Medical School, London, for "gross misconduct" is appealing to the High Court against the decision.

Dr Diana Kershaw, an assistant lecturer, is alleging breach of contract against her former employer, claiming that she was not given a fair hearing and that her reasons for dismissal were not stated.

Her case has now been taken up by the Association of University Teachers. The school's London region officer, Mr Malcolm Keight, said that Dr Kershaw had been subject to "gross misconduct" and that her actions were "grossly negligent".

He said the college had dismissed her, without formal warning or a hearing, for "gross misconduct".

Dr Kershaw's behaviour at a meeting of the school's board of governors was "grossly negligent", he said. She was dismissed for "gross misconduct".

Dr Kershaw said she was not given a fair hearing and that her reasons for dismissal were not stated.

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Pupil pay incentives ruled out

by Patricia Santinelli

Financial incentives to induce young people to stay on at school or college rather than join the Youth Training Scheme are unlikely to be a priority of this Government, even if funds were available, it was revealed last week.

Mr Christopher Patten, minister of state for education, told the annual conference of the Association of Colleges in Further and Higher Education that to reduce the financial discrimination between those who went on to the YTS and those who remained at school or college would cost around £500 million.

"This is a considerable cost, and I do not believe that if we had the funds, this would be our first priority," he said.

Mr Patten added that there was no strong evidence that the lack of existing financial inducements was leading to fewer people staying on.

Of far greater concern was the fact that many young people were leaving colleges without completing their qualifications in the rush to get a job.

Mr Patten said he had been very impressed with the flexibility and entrepreneurial spirit he had found in colleges in recent visits.

But he could not offer them any assurance that the Government would ever provide them with the capital necessary for equipping them to respond to the demands of industry and commerce in the fields of new technology.

Nor could he guarantee the institutions that there would be fewer changes. On the contrary he forecast more changes and a lively debate over the next 18 months, over areas such as education's delivery system.

Mr John Barnes, the new director general of City and Guilds of London Institute, said quick Government action was likely once the review's final report was out. It was likely to meet its May deadline.

The review was unlikely to recommend a wholesale clearance and replacement of the present system of vocational qualifications on the lines of recent developments in Scotland.

"But what we are really talking about is not rationalization so much as equipping the nation to fight an economic war," Mr Barnes said. "We do not compare well to Japan, the US and the EEC in terms of producing a skilled workforce."

Industrial plea for graduates

A plea for many more graduates to enter industry rather than other careers with no recruitment shortage came from Sir Edwin Nixon, chairman of IBM.

Speaking about the purpose of industry Year 1986 and beyond, he said it was vital to change the attitude of the most able young people towards careers in industry.

Sir Edwin stressed that he was not making a special plea for more computer specialists; technical experts were needed but mainly engineers and scientists. The great requirement at IBM and many other companies was for agile minds coupled with personality.

"We have to get across to our graduates something of the satisfaction and excitement to be found in the problem-solving world of industry," he said.

"We must win them over from the professions which traditionally have no recruitment shortages."

Sir Edwin did recognize in answer to questions that the rewards for young people, for example choosing engineering, were poor. He could offer no quick solution to this but said that in time the profession would have a higher profile and rewards would follow. He exhorted young people to go for "risk" jobs rather than secure positions.

But he did rule out Government action to enforce a requirement that all young people wishing to enter a year in industry or in the outside world working.

New role urged for SCOTVEC

by Olga Wojtas
Scottish Correspondent

A confidential document on the future of the Scottish Vocational Education Council makes the radical proposal that it should become involved in training further education lecturers.

The 61-page report is part of a £50,000 management review of SCOTVEC being carried out by consultants Hay-MSL, and also foresees an expanded role for the council in reaching new students and forging links with the school curriculum and examination system.

The report concludes that if the success of Scotland's new national certificate, based on modular courses, depends on the competence of further education lecturers, they must be given more support and training.

Support has three elements, the consultants say: providing training in teaching methods, developing data banks of teaching materials and developing test and assessment materials for the colleges. Only the latter is currently seen as part of the council's remit.

The report states: "SCOTVEC has an interest in the general development of college staff and a specific concern to ensure that they receive adequate guidance on assessment methods. SCOTVEC's expertise and remit to

achieve a national standard of assessment should lead to its involvement in the area of training lecturers in assessment."

The consultants also ask the council as a matter of urgency to review its procedures for the registration of students, collection of fees, collation of assessments and the issue of certificates, since colleges complain the arrangements are too complex and excessively burdensome.

SCOTVEC's recent promotional efforts do not appear designed to reach a wider audience, the report claims.

It also comments on the growing overlap between SCOTVEC and the Consultative Committee on the Curriculum, which, traditionally, has had sole responsibility for advising the Secretary of State for Scotland on what should be taught in schools.

The report says the teaching of national certificate modules in schools raises issues which should be fully discussed between the two bodies.

Meanwhile, SCOTVEC seems poised for a collision with the educational unions after deciding to offer private agencies to offer National Certificate courses.

It accepted applications from the Glasgow Chamber of Commerce and the Lanarkshire Area Group Training Association to run course modules

drawn up under the new Scottish Education Department action plan.

But the unions claim there is still four months to run on a two-year moratorium on privatization of the modules. The Educational Institute of Scotland, and Scottish Further and Higher Education Association have said they will withdraw their members from all SCOTVEC activities, which are heavily dependent on further education lecturers for validation and assessment.

Mr Jack Dale, further and higher education secretary of the EIS accused SCOTVEC of "inviting an adverse reaction from our members. It is our understanding that the moratorium means a ban on all providers of modules outwith the public sector until the end of this session."

But SCOTVEC validation guidelines make it clear that the council will consider submissions "primarily" from schools, education authority colleges, central institutions and skill centres.

Other interested parties, the guidelines continue, will have to satisfy the council that they have the necessary staff expertise and resources to mount quality courses. However, the two schemes approved in principle this week have not been allowed to offer all the modules for which they applied.



Bradford's labour of love

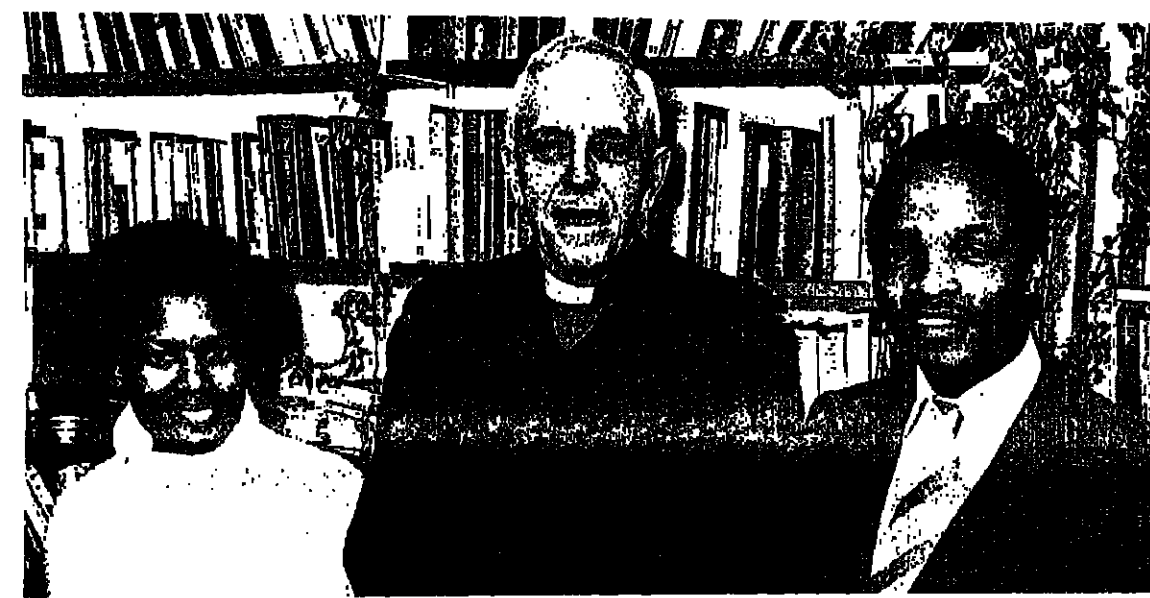
The romantic inclinations of students in Bradford and Hallowell are to be compared and contrasted in a new worldwide survey of sexual attitudes among the young.

The project is being run by the University of Mississippi in the USA, and is aiming to update the findings of the Kinsey report of the 1950s, widely regarded as a key influence in the rise of sexual permissiveness in Britain and America.

The new survey will test the thoughts of a new generation of students, whose parents were the vanguard of the age of liberation in the 1960s. British attitudes will be represented by students at Bradford University, who will be surveyed confidentially by the university's school of psychology.

The Mississippi project will also include students from other countries in the world, although these have not yet been finalized. One country which will take part is Hawaii, reflecting the organizers' wish to obtain a cross-section of cultural views.

The survey will not concentrate exclusively on sexual matters; it will include a "romantic love scale", to test whether the teenagers of the mid-1980s still seek those quiet, tender moments in the back of the lecture hall in which to whisper their sweet nothings...



Anti-Apartheid president the right reverend Trevor Huddleston hears at first hand how a young South African fared at the hands of the security police.

He was guest speaker last week at an open seminar at the University of Essex chaired by Mr Shiphoo Pityana, a second-year student in government and sociology at the university. Mr Pityana,

from Port Elizabeth, was detained and tortured several times by the police between 1976 and 1982 because of his involvement in student demonstrations.

He was adopted by Amnesty International as a prisoner of conscience and came to Britain three years ago. He is pictured with his wife Nikulie.

Writing course is on the right lines, say HM Inspectors

Sheffield Polytechnic's BA in English studies, which combines literary study, linguistics and practical writing, is unusual and popular with students who achieve a good standard of work, according to a report by HM Inspectors.

The combination of studies in the course offers not only the chance for creating literary texts but also extends the range of analytical skills which can be brought to bear on the writings of others, the report says. Applications from students for the course, which is run on both a full-time and part-time basis, more than doubled from 500 for 40 places in 1980 to 1,594 for the same number of places in 1984.

The inclusion of linguistics in the course is unusual and commendable, that of writing skills is rare and welcome, the report says. "The confidence that students can improve as writers as a result of the course appears to be well placed."

The polytechnic's two writers in residence make a substantial and valuable contribution to teaching, and although staff publications are unevenly distributed they include poetry and other original work.

The library for English studies is well supplied and well used by students, and adequately resourced despite recent reductions. Accommodation is convenient but bare, with nowhere set aside for students. Student support is good, with fewer withdrawals from the course than the rest of the polytechnic. More

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PEAT
MARWICK

Class of '58: men won more degrees

by Patricia Santinelli

More women than men born in 1958 undertook education courses but fewer did so at higher levels, according to the findings of a survey published in the Further Education Unit bulletin.

The National Child Development Study is based on a survey of 12,500 people born between March 3 and March 9, 1958 which were followed up at regular intervals by the National Children's Bureau. The findings are based on interviews carried out between 1981/82 covering 78 per cent of the group.

Women outnumbered men in Royal Society of Arts qualifications and to a lesser extent in professional qualifications including nursing. Men tended to have obtained degrees, and ordinary and higher national diplomas. More women attended further education colleges, while men were more often at universities or polytechnics.

The same pattern was reflected in the subjects of study. For over two fifths of the women the subject of their highest course was in the category of social administration or business studies, and one in ten was on an education or health course. Many more men studied engineering, technology or science subjects.

Women were far less likely to undertake training based on their employment, and not surprisingly very few indeed did an apprenticeship. If they did this was largely in the personal services, especially hairdressing and tended to result in lower level qualifications than those achieved by men.

The study, which shows that by the age of 23 some 71 per cent of the cohort had undertaken either an educational course, apprenticeship or other work-based training since leaving school, also provides evidence that education affords some protection against unemployment.

Among men who completed their full-time education at the age of 16, 5 per cent were unemployed in June of the year in which they were 19 and 14 per cent when they were 23. The corresponding figures for those who continued full-time education until the age of 18 were 4.5 per cent and 6 per cent. Thus the contrast was particularly great in later years when unemployment was more widespread.

Similarly, among men who had had no education or work-based training since leaving school, 20 per cent were unemployed at the time of the 23-year interview, almost twice as many as those who had received education or training of some kind.



Open and shut case for access

The Mayor of Sunderland had an opportunity to find out about open learning when he inaugurated Sunderland Polytechnic's new centre for continuing education last week.

The mayor, Councillor Ralph Baxter, was given a guided tour of the

unit, which will provide counselling and guidance for adults on the complete range of educational opportunities throughout the region. The unit has also been established to act as a major access point for adults, and it will be promoting distance learning through the Open Tech.

Universities pledge plan for blacks

by David Jobbins

A course aimed at introducing students from ethnic minority backgrounds to higher education was launched last week by the universities of the Third Age. The course, to be run at Polytechnic, for entry to

The course, restricted to students of African, Caribbean, Asian and Bangladeshi backgrounds living in the borough of Brent, is based on Open University Foundation material but from a non-Eurocentric perspective with Afro-Asian and Caribbean history and literature.

It will cover study skills, programme of individual goals, counselling and learning around a core of social science subjects.

Universities are emerging as runners in expressing interest. C. tutor Mr John Fernandes said: "I have not asked universities for a long time but for our students considered on their merits. We made any objection to a black course."

Universities confirming they will consider students from the area include Warwick, Leicester, and University College, Cardiff.

The programme is very similar to one which was rejected by Polytechnic of North London last year. It had doubts about some of the aims, and was doubtful about the legality of a blacks-only intake.

Off-guard for battle of the bulge

The next decade's decline in the number of 18-year-olds presents a challenge to test the ability of higher education.

This is the view of Sir Kenneth Alexander, the University of London's principal, Sir Kenneth Alexander, writing in the university's annual report. Government policy-makers should be aware of the fact that this is a short-term trend which will be followed by a bulge, Sir Kenneth says.

There should be an expansion of access to higher education to part-time study, and widening academic, social and commercial links of widening access.

The universities' dependence on state funding has weakened defences against state intervention. It could be reversed if a higher proportion of income free from government or University Grants Committee control were achieved by students rising to 40 per cent of the total running a university, rather than the present 15 per cent.

The short-term in a most effective way. But once again the key to being able to do this without having inflation wrecking the whole strategy is to ensure that pay increases do not outstrip what is growth in the economy can sustain.

Pay settlements in the public sector have been running ahead of inflation for some considerable time and are undermining our competitiveness in overseas markets. This has been a continual deterioration in unit labour costs which cannot be sustained if we are to sustain our market share and start creating enough jobs to reduce unemployment. The Government's only response to this is exhortation. The Labour Party's shackled on incomes policy because of its relationship with the unions. We are proposing a new pay system without boards of taxation system. It is a decentralised system without boards of taxation system. It is a decentralised system without boards of taxation system. It is a decentralised system without boards of taxation system.

My colleagues and I have been working on our own Budget proposals and will be publishing them next week. We believe that it is vital to concentrate on the unemployment problems and the long-term investment that is needed both in people and in plant and buildings to ensure that we can improve our standard of living and compete with other countries in the decades ahead. This is not a difficult strategy to follow because long-term investment generates jobs in

Ian Wrigglesworth
The author is Social Democratic Party for Stockton South.

Funds for Third Age university

by Maggie Richards

An education scheme for older people has been boosted this week by news that it is to receive Government funding. The University of the Third Age is to receive grants over a three-year period totalling £20,950.

Though the award is small, it is anticipated that it will have an important effect in aiding the self-help organization with its expansion plans.

An approach to the Department of Education and Science was made after initial charity funding of U3A had been expended. Since its establishment in 1982, the U3A movement in Britain has grown to involve 15 groups and some 7,000 members.

Eventually it is envisaged that the organization will raise sufficient funds for central and administrative activities by levying its member groups.

It is anticipated that the movement will expand from its present five to embrace 300 to 400 groups in several years' time. In the mean time, the DES cash will help the organization bridge the financial gap.

In making the award the DES has specified that some of the money should be used to develop the U3A principle in inner city areas, with the unemployed, and among communities with large ethnic minority groups.

Officials of U3A have now started to examine ways the grant aid might be used to benefit people in these categories. Already one project to develop a U3A scheme for an inner city area of Leicester is under active consideration.

Commenting on the award, Mr Eric Midwinter, U3A's general secretary, said: "It is a tremendous boost to all concerned with U3A activity up and down the country that the Government has acknowledged the work we do, not just with pleasant words, but with hard cash. I consider this one of the greatest boosts, practically and psychologically, that U3A has ever received."

Engineering expansion call

by Felicity Jones

Engineering research in universities should be greatly expanded by the end of the decade through Government and industry funding, the body which represents all engineering professors has recommended.

A target of 7,500 research workers is set by the Engineering Professors' Conference based on policies to switch from physical to engineering sciences. There should be greater collaboration and sharing of facilities between universities, industry and research establishments but with universities retaining the responsibility for long-term "enabling technology" research.

Academic staff would increase from 3,873 to 4,421 which would lead to a 32 per cent increase in students by 1990, excluding post-doctoral research workers.

"The SERC does not have the money

But this rapid increase in research capacity will depend on a substantial improvement in resources rising to £120 million at current prices.

It is suggested that the Science and Engineering Research Council could increase its contribution to £79 million with the remainder coming from the Department of Trade and Industry and increased companies' contribution.

Professor Roger Sargent, head of chemical engineering at Imperial College and chairman of the EPC working party which produced the report, said: "The problem is how to attract those people needed into research of the right calibre and we recommend that they should be employed as research assistants rather than as research studentships to draw people into research in sufficient numbers."

"The SERC does not have the money

to develop on this scale and that is why we would look to the DTI and industry whose contributions are small."

It would be possible to support 200 research teams within universities on a rolling basis which could consist of three teaching staff, four research assistants and two technicians.

The improved career possibilities for the full-time researchers would help to attract high-calibre staff and would improve the chances of carrying the work to a point where industrial development could take over.

Professor John Benyon, EPC chairman, said the report had been prepared at the request of the Engineering Council which has been preoccupied with undergraduate education but wanted to quantify what would be an appropriate level of research.



Lancashire Polytechnic had the Council for National Academic Awards on the run when Dr Arnold Goldmann (centre), CNAAs assistant chief officer responsible for the polytechnic, swapped his pin stripes and briefcase for a tracksuit to join in a charity fun run. It raised more than £1,000 for the Tim Curtis appeal fund for leukaemia research. Dr Curtis (right), is being treated for leukaemia. Polytechnic director Eric Robinson (left) also joined in.

De La Salle faces new threat

De La Salle College, Manchester, faces closure yet again after the collapse of merger talks with Liverpool Institute of Higher Education.

The college was threatened with closure by the National Advisory Body last year, but revived by Sir Keith Joseph, Secretary of State for Education and Science, and given until March 31 to come up with a viable merger plan.

But last week Liverpool Institute withdrew from negotiations. This followed a statement by the Provincial of De La Salle order, trustees of the college, saying that owing to legal and financial consequences, they could no longer support the proposal.

The major sticking point centres on the fact that if the college and its site became part of the institute, Liverpool would have responsibility for the academic programme, students and so on, but the financial burden would remain with the order.

The order felt that this lack of control, together with legal and financial implications which would conflict with its nationwide responsibilities, made the merger impossible.

Both the principal of De La Salle College and the rector of Liverpool Institute say that the matter would not be resolved if the Catholic Education Council took responsibility and because the providing body. And they pointed out that the CEC had never actually made a formal offer.

De La Salle is taking the third threat of closure coolly. It has decided not to advance a meeting of its governors scheduled for March 18.

However, a spokesman for the college's action group said that it was not satisfied that every avenue had been explored and proposed to put an academic plan to Sir Keith.

Meanwhile Liverpool is to make a bid for the places which will be left if the college is closed, so as to keep resources and courses developed in the voluntary sector within the north-west. The college has some 200 students on its BA and BSc courses and has an intake for 1986, which will mean it needs to remain open until 1989.

Painting the town red

Eight students from Helsinki University of Technology, embroiled in a "funniest joke of the year" contest, braved the cold and dark of a February night to cover up 30 Helsinki street signs with inscriptions in the language of their near and not-so-dear neighbour, Russia.

The main shopping street became "Leninski Prospekt", the city boundary was designated "Metroskoi". The Cyrillic script was so convincing many pedestrians thought a visiting film group had yet again chosen Helsinki as a Soviet backdrop.

For such mischief the students were each fined £14 by the police, and ordered to pay £230 to have their signs unglued. The chastened octet apologized to the city fathers, the constabulary and the Soviet embassy - though it is not clear whether the Kremlin was tempted to send a gunboat or simply laugh off the harmless wheezes allowed by its much vaunted "peaceful co-existence" with the neutral Finns.

Hull University is to honour playwright Harold Pinter with a D.Litt at its July awards ceremony. Hull University is also to honour Lady Antonia Fraser, writer and historian, with a D.Litt at its July awards ceremony. Harold Pinter and Lady Antonia are husband and wife. There's nothing like togetherness.

Student politicians at Keele University, frustrated by making little headway among the people who run education, have appealed to those who run everything else. The students' union last week declared itself the Free Republic of Keele, and proceeded to write to world leaders appealing for support.

In a spirit of evenhandedness letters were sent to both Ronald Reagan and Mikhail Gorbachev, pointing out that the FRK as a state formed in the face of oppression - cuts in education and student support - has much in common with their own history.

"There being such similarity between the United States of America/Union of Soviet Socialist Republics and the people's Free Republic of Keele, I have no qualms in asking for military aid in our struggle," the letters to the White House and the Kremlin say.

According to student and republic president Tony Bell, no responses to these letters have yet been received, and the free republic is now in suspension but not abolished until the Government ends the education cuts.

Revolutionary approach

Mr David Bleiman, regional official for the Association of University Teachers in Scotland, may be getting a nudge towards early retirement. After the AUT Scottish council passed two contradictory motions both supporting a Scottish higher education planning body, and viewing it with grave suspicion, Mr Bleiman was asked to remark: "It shows we're taking hard decisions in the real world."

University vice chancellors have picked stylish but tough television journalist Auriel Stevens to refurbish their public image. Ma Stevens, of Channel Four's *A Week in Politics* and previously of *The Observer* and the *T.E.S.* beat off stiff opposition for the £25,000-a-year post to revamp the flagging image of the universities - not least in the v-c's committee headquarters, where her straight-talking journalism experience may ruffle a few bureaucratic feathers.

NUS president Mr Phil Woolas, a NOLS member, blamed much of the confusion at last week's mass rally in London against the Fowler proposals on Trotskyites. But he does not believe the lack of media attention attracted by the 30,000 marchers can be used as ammunition against the NUS leadership at Easter.

NUS leaders last week drew their concern about the effects of the proposals for welfare state to the attention of Mr Tony Newton, the minister for social security, but say they came away from the meeting without answers. The social security advisory committee is expected to report later this month.

Other supporters of the "democratic left" went on to win 12 out of the 14 seats on the NOLS national committee.

But in the Easter elections for NUS, NOLS' greatest threat comes from outside, despite the splintering of the left alliance. Although denied by left alliance leaders, NOLS believes they

are to face a concerted push by their political opponents. Much of the interest centres around the activities of supporters of *Socialist Organizer*, the political force behind Socialist Students in NOLS (SSSN), and any informal electoral pacts they may form with liberal and communist students.

In the internal struggle with supporters of *Millant*, the Labour Coordinating Committee candidates scored a major victory during this week's NOLS conference. Mr Ben Lucas, an LCC supporter, was elected chair, easily defeating his *Millant*-backed opponent, Mr Douglas Blackstock.

The university has used the site since 1904, but began to move into its Whiteknights premises in 1947. During the expansion years, it was hoped to move the whole university there, but this became impossible when money for building dried up.

Now it has to reconsider its position yet again to cope with future funding cuts - the university was already running in deficit last year.

The committee visited the university last December and suggested that the university should be self-contained in its Whiteknights site by the end of the decade. The council has

Sludge adds life ingredient

Scientists have found an award-winning way of introducing life to sterile acid-lakes - they pump sewage sludge into them.

The basic technique pioneered by scientists working for the Freshwater Biological Association involves pouring raw sewage which has been partly digested by bacteria into the lake and later adding hydrated lime.

Adding lime to counteract the acidity is not enough but the presence of the sewage creates conditions needed to build a self-renewing ecosystem in largely barren lakes.

A pioneer project in north Norfolk, carried out with the approval of the Anglian water authority, has turned the lifeless Blue Lagoon near King's Lynn into a productive lake in just two years with algae and other flora typical of rich waters now present.

Now the process is being developed for other water holes which have remained barren after the extraction of sand for glass making.

It has been developed by Dr Bill Davison of the FBA, which together with British Industrial Sands this week received the year's only Environment Foundation pollution abatement technology award commendation.

Replan's lack of planning defended

by Maggie Richards

Attempts to mount a £2.5 million education programme for the unemployed were defended this week by a senior civil servant from the Department of Education and Science.

Mr Noel Thompson, permanent under secretary at the DES, was addressing a conference organized by the National Council for Voluntary Organizations, which last year was severely critical of the Replan programme. The council denounced the project for inadequate funding, unclear priorities.

Mr Thompson said the DES had tried to respond quickly to the need for courses for jobless people. With any pilot programme it had to be accepted some mistakes would occur.

"We are a lot clearer now with 18 months of the programme under our belts. Replan is now showing all the signs of being a success," he added.

Mr Thompson did acknowledge, however, that the DES had underestimated the influence voluntary agencies could exert through grassroots links with the unemployed, a major complaint of the council last year.

Generally, the voluntary sector had proved through its involvement in projects such as Replan and audit literature that it had a major contribution to make. The DES had identified new priorities in continuing education, and looked to voluntary agencies to play a large part in the use of resources.

From the Manpower Services Commission, Miss Jenny Bacon identified some of the major tasks for voluntary agencies in dealing with the MSX. These included highlighting education and training opportunities at grassroots, and becoming involved in the integral planning of programmes.

Mr Robert Seaton, Dundee's secretary, said it was likely the court would discuss the pay deductions at its next meeting on Monday.

Dundee AUT has also recently sought the intervention of the Advisory, Conciliation and Arbitration Service in resolving a 10-year-old dispute over setting up a formal procedural agreement between the association and the university.

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PARTY LINE

Budgeting for a heritage of bitterness

make on the most cost-effective and direct way of creating jobs.

Increasing employer spending, cutting employers' National Insurance contributions, cutting VAT, spending more on the Community Programme or other direct community employment measures, have all been shown quite clearly to be more effective in creating jobs than cutting income tax.

Central Office polling and market research figures however will be used to determine which strategy pays the most handsome electoral dividend. Going down the road of income tax cuts would be the most cynical and damaging strategy to follow. It may have a short-term electoral benefit for the Conservative Party but it would do enormous damage to the long-term interests of the country. Central Office knows that its party can still form the next Government with 60 per cent of the country voting against it. If it takes the view that it therefore only needs

to concentrate on its own 40 per cent then it will be ignoring the overwhelming need to close the divisions which exist within our country and will instead be making them wider and deeper.

In the Government's plans for public expenditure which we debated in the House two weeks ago, the intention to cut capital expenditure by 12½ per cent was one of the most depressing aspects of a fairly depressing White Paper.

Since Roy Jenkins' time as Chancellor in the late 1960s the percentage of public expenditure devoted to capital investment has fallen from 7 per cent to 2 per cent. No institution or business would allow its capital investment and its capital stock to decline in the way this Government is doing. It is acting in the most imprudent way for the long-term interests of the country. It is doing so at the very time when we have the bonanza of North Sea oil which should provide us with the

resources to do just the opposite. It is compounded by the fact that at the time this is happening it is hogging off state assets to the tune of billions of pounds like aristocrats selling off the family heirlooms to pay the grocery bills. It may win the Conservatives the next election if they pursue it vigorously enough but it is leaving a heritage of bitterness and disenchantment as well as derelict and inadequate capital resources.

My colleagues and I have been working on our own Budget proposals and will be publishing them next week. We believe that it is vital to concentrate on the unemployment problems and the long-term investment that is needed both in people and in plant and buildings to ensure that we can improve our standard of living and compete with other countries in the decades ahead. This is not a difficult strategy to follow because long-term investment generates jobs in

the short-term in a most effective way. But once again the key to being able to do this without having inflation wrecking the whole strategy is to ensure that pay increases do not outstrip what is growth in the economy can sustain.

Pay settlements in the public sector have been running ahead of inflation for some considerable time and are undermining our competitiveness in overseas markets. This has been a continual deterioration in unit labour costs which cannot be sustained if we are to sustain our market share and start creating enough jobs to reduce unemployment. The Government's only response to this is exhortation. The Labour Party's shackled on incomes policy because of its relationship with the unions. We are proposing a new pay system without boards of taxation system. It is a decentralised system without boards of taxation system. It is a decentralised system without boards of taxation system. It is a decentralised system without boards of taxation system.

Ian Wrigglesworth
The author is Social Democratic Party for Stockton South.

Estate agents bid for site as Reading scraps arts project

Reading University may have to sell some of its buildings and scrap plans to create a new arts complex because of the need to cut its costs.

The buildings, which stand on 10 acres of land in London Road, Reading, house the university's departments of fine art, history of art, microbiology, soil science and the school of education, and include the great hall and war memorial tower.

Plans were being made to move the department of music to the site, and create an arts complex. But now the university council is considering the sale of the buildings, following what it calls "advice" from the University Grants Committee.

The committee visited the university last December and suggested that the university should be self-contained in its Whiteknights site by the end of the decade. The council has

therefore decided to postpone the music move and has begun a development study for the whole of the London Road site area.

A spokesman for the university said several estate agents had already shown interest in acquiring the site, which is less than a mile from the town centre. But the amount raised by a sale is dependent on acquiring suitable planning permission for any expansion.

The university has used the site since 1904, but began to move into its Whiteknights premises in 1947. During the expansion years, it was hoped to move the whole university there, but this became impossible when money for building dried up.

Now it has to reconsider its position yet again to cope with future funding cuts - the university was already running in deficit last year.

'Democratic left' gain ground

Supporters of the Labour party leadership have tightened their grip on the National Organization of Labour Students.

But the NOLS leadership believes that other political groups are planning a loose alliance designed to overturn its majority on the executive of the National Union of Students.

In the internal struggle with supporters of *Millant*, the Labour Coordinating Committee candidates scored a major victory during this week's NOLS conference. Mr Ben Lucas, an LCC supporter, was elected chair, easily defeating his *Millant*-backed opponent, Mr Douglas Blackstock.

Other supporters of the "democratic left" went on to win 12 out of the 14 seats on the NOLS national committee.

But in the Easter elections for NUS, NOLS' greatest threat comes from outside, despite the splintering of the left alliance. Although denied by left alliance leaders, NOLS believes they

are to face a concerted push by their political opponents. Much of the interest centres around the activities of supporters of *Socialist Organizer*, the political force behind Socialist Students in NOLS (SSSN), and any informal electoral pacts they may form with liberal and communist students.

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Suffer the children – and the parents

The recent Government green paper *The Development of Higher Education into the 1990s* makes several references to the possibility of student grants being replaced or partly replaced by student loans, though this matter is the subject of a separate Government review of student support. In its response to the green paper, the Educational Institute of Scotland therefore made its position clear on this issue.

We recognize, of course, that the present system of grant plus parental contribution, with the grant being progressively clawed back on a scale related to parental income, is profoundly unsatisfactory on a number of counts. Some students are placed in dire financial straits because of the unwillingness of the parent to hand over the putative parental contribution. Eighteen, nineteen and twenty-year-olds, who have obtained the rights of adult citizens in every other field, find themselves dependent on parents who may be out of sympathy with their aspirations and lifestyle.

However, the EIS believes that a move towards student loans would have a profoundly disincentive effect on school-leavers who were considering entering higher education and would in fact divert many talented youngsters into careers where training is provided during paid service.

Already, even with a student grant system, many students leaving the sixth year of secondary education with university entrance qualifications are deciding to take whatever job opportunities are available rather than face three or four years in higher education with no certainty of satisfying or well-paid employment at the end of the day.

The prospect of the early years of possible graduate employment carrying an obligation to repay a student loan would be a further powerful disincentive to entering higher education. Those early years of employment would be likely to coincide with marriage, buying a house and otherwise assuming the full financial responsibilities of adulthood. To what extent would student loan repayments erode the differential between graduate and non-graduate salaries? In many areas of employment the answer would be "substantially" and, in the case of teaching at current salary levels, the answer would be "totally".

The Government's case for considering loans instead of grants comes under three headings: (a) bringing student maintenance costs more into line with other countries; (b) making students take "greater care over their choice of study" through giving them "a greater financial engagement"; (c) finding arrangements which are "less onerous to the taxpayer".

On the first point, it should be observed that countries operating student loan schemes generally offer greater financial rewards to graduates than is the case in the UK. The second point is consistent with the Government's attempts to strengthen the vocational impulse in higher education. It is the third point, however, which should perhaps cause the greatest concern since it indicates that a major motive for the change is to reduce the burden on the Exchequer of support for students. As with other aspects of the green paper proposals, the liberal and humane tones in which issues are discussed is seen, at the end of the day, as a cloak disguising a familiar message about the retrenchment of public expenditure.

Fred Forrester

The author is organizing secretary of the Educational Institute of Scotland.

Dons veto Scottish Office

by Olga Wojtas

Scottish academics have vetoed the devolution of university funding to the Scottish Office, and say it should come through a Scottish subcommittee of the University Grants Committee.

But there was confusion at the Association of University Teachers (Scotland) council meeting last weekend at Heriot-Watt University over their views on a single planning body to co-ordinate the whole of Scottish higher education.

Delegates voted to support setting up such a body by 19 to 10, but immediately passed another motion by 16 to 13 saying they continued to regard the proposal for a single body with suspicion.

The options of a single planning, or planning and funding body, were proposed in December by the Scottish Tertiary Education Advisory Council, which the AUT(S) praised for its "positive approach" on issues such as student access and funding, and the need to maintain a full range of academic subjects in Scottish institutions.

A great deal of the STEAC report was favourable to universities, said

Professor Bill Wallace of Glasgow University, vice chairman of AUT(S). He suspected that following the Graham committee's investigation of the UGC, it would become more centralized, with the Scottish subcommittee as "the lag end".

But Mr John Chartres, senior vice president of the AUT, said backing the Scottish subcommittee was the safest position to adopt, since a single planning body was merely an evolutionary stage towards a planning and funding body which would be dangerous during a time of financial contraction.

Dr Nick Fisher of Aberdeen University said his branch had been appalled by the complete lack of educational thinking in the STEAC report.

"It is simply a way of planning manpower requirements," he said. "And in Aberdeen, we don't necessarily relish the prospect of imposition from Edinburgh any more than in position from London."

However, Professor Arthur Bolton of Heriot-Watt University said while student numbers in his department of civil engineering had fallen by half over the past five years, comparable departments in central institutions, run by the Scottish Education Depart-

ment, had seen a considerable increase in intake.

The Jarrett report on efficiency in the universities came under attack for leading to power being concentrated unduly in Scottish universities' central administration.

Delegates unanimously passed a motion calling on senates and faculties to reassert their rights of decision on academic matters, and to do everything possible to maintain the existing spread of subjects and to support research in all departments and among all staff.

Mr John Berridge of Dundee University said university courts had initially been established to deal with financial matters, while senates covered academic issues. But this was in danger of being forgotten, as many new staff had never seen court and senate acting in concert as intended.

Dr Norman Peacock of Strathclyde University said one difficulty was that senate and faculty meetings tended to be chaired by members of the "small coterie" taking control of the university, and urged that the AUT(S) appeal should be sent to individual members of these groups, not merely the chairman or university registrars.

Now PICKUP woos support from unions

by Maggie Richards

A major bid to secure trade union support for the PICKUP updating programme is to be launched by the Department of Education and Science. Up to £100,000 is to be made available for a special liaison project with higher education institutions.

And a call to unions to join forces with education and industry was made last week by Mr George Widdien, higher education minister.

Speaking at a conference at Luton College of Higher Education, Mr Widdien said employers were becoming increasingly involved in PICKUP, the DES-sponsored Professional, Industrial and Commercial Updating Programme. It was now time for unions to join in.

"So far PICKUP projects have been highly successful in establishing partnerships between colleges and employers," he said.

"We must now make collaboration with trade unions and professional bodies a priority."

Mr Widdien pointed to examples in the United States and France, where training programmes had been implemented following pressure from unions.

"With some notable exceptions, for too long British trade unions have tended to be the passive recipients of training and updating, rather than the instigators or champions of change," he said.

The DES was now exploring the possibility of establishing a "demonstration project", which would seek to bring together colleges, polytechnics and universities in collaboration with unions to tackle new training needs.

The DES is also anxious to expand the development of the PICKUP programme into the professions. Later this month a one-day conference on updating and the professions is to be staged at Reading. It will examine current provision and possible expansion.



Dr Patrick Nuttgens, the former director of Leeds Polytechnic, receives an honorary fellowship from his successor, Mr Christopher Price (right).

Poor labs and poor teaching 'put students off science'

by Peter Aspdren

Schoolchildren are being put off studying mainstream science subjects at university by poor quality teaching and inadequate and outmoded laboratories and equipment, claims a report on admissions to science courses.

Professor Martin Davies, admissions officer at the University of East Anglia, also argues that many parents and children still see science as having a lower status than the arts or professions, despite Government strictures.

"Although sixth-formers may be hearing what the Government says about the need for the new generation to commit themselves to science and technology, many of them are more influenced by their perception of what the Government is doing," says the report.

"If politicians believe that the nation's future depends on a healthy throughput of graduate scientists, they clearly have to arrange things so that the rewards appear to be commensurate with the effort required."

Professor Davies says the fall in applications for university places in mainstream science subjects such as mathematics, biology and electronic engineering would cause extra problems for university departments which were facing the general fall in future student numbers anyway.

The report says the shortage of science candidates is not something under universities' control, and Government needs to make a massive investment in the field at secondary level.

Council to promote art for industry's sake

An art and design research council to make policy and distribute funding to an expanded number of postgraduate art and design courses and students should be created as an urgent priority, according to a working party drawn from leading academics in those subjects.

The research council should be set up with Government funding but then draw in industrial support, according to the working party of the Conference for Higher Education in Art and Design, which has representatives from polytechnics, art and other colleges including the Royal College of Art.

The purpose would be "to encourage and promote high quality research in industrially-related design, the craft disciplines and the visual arts, for the benefit of British industry and the improvement of the built environment."

It would emphasize applied research, encouraging new ideas, bringing industry into more involvement with design education, promoting research into the value of crafts in a new ideas on the relationship between art and design and the built environment.

It would have a database and library on all undergraduate and postgraduate work in art and design and a secretariat. It would fund individuals and groups, encouraging collaboration between education and industry with research conducted in industry where normal educational provision or normal industrial design processes.

Postgraduate art and design should be expanded anyway so it becomes a greater proportion of national education in art and design, the working

party paper says. Priorities for research in the sector include curriculum development in art and design, particularly the application of information technology, computer-aided design and manufacture to undergraduate and postgraduate courses, work on small business and catering for consumer demand; and research projects on evaluating new and original works of art.

Postgraduate courses currently tend to be full-time; part-time courses and those which can be taken in stages to build up to a postgraduate award should be developed, the working party says. Postgraduate work in design and design-related subjects and designers' practice are all seriously under-developed and existing provision has grown up unsystematically.

Government accused of hypocrisy

The chairman of AUT (Scotland) Sandy Young, accused the Government of "misleading hypocrisy" claiming that the higher education budget was being cut by only 1 per cent.

The universities had been promised level funding at the last generation by no less an authority than the prime ministers, and the cuts were fact closer to 3 per cent, or even for those with large medical schools the Government was talking about the "dishonest assumption" of a 1 per cent base for salary increases.

"The whole of Scottish education from nursery school to university is in a state of crisis. All the constitutional changes have been taking action against the policies of the Government," he said.

Mr Young urged the new Secretary of State for Scotland, Mr Malcolm Rifkind, to negotiate the desperate needed pay settlement with 30,000 teachers. "Time is running out for year's candidates for higher education and we have a particular anxiety about the effect on university entrance of the threatened disruption of Scottish examinations Board exams this spring summer," he said.

The school unions had shown AUT a splendid example in teachers and lecturers had to be prepared for long light. "The alternative is a total surrender to the forces of the Philipines," said Mr Young.

Any "academic swap shop" transfer of staff between the Scottish universities must be voluntary, Mr Young said, and must involve full negotiation and consultation in both directions.

Delegates unanimously passed a motion calling on the AUT(S) executive committee to coordinate any transfer moves with local branches.

Mr Ian Macfarlane of Strathclyde University said talks were currently under way on moving Strathclyde mathematics staff to Strathclyde in exchange for geography lecturers.

"It is vitally important that we don't set precedents which might be taken as leverage in other institutions," he said, adding that there was a danger of individuals being approached by the university administration, and thinking this was a career prospect, and that there was no need to inform the AUT at an early stage.

Dr Norman Peacock of Strathclyde University said it was vital to counter the rights not only of transfer staff but of those remaining. "We are unable to find a department to be transferred that it ceases to exist," he warned.

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Open house inside Dublin's 'ivory tower'

from John Walshe



Dr Patrick Masterson: popular

The new president of University College, Dublin, intends to invite politicians, civil servants, journalists, business people and other public opinion moulders on to the campus to see for themselves the role of the university in modern society.

Dr. Patrick Masterson believes the myth of the "ivory towers" is still prevalent in Ireland and says there is a need to inform the public of what happens in a university.

UCD is the biggest educational institution in Ireland with 10,000 full-time students, most of them studying on a 320-acre campus a few miles from the city centre.

The new president is a popular choice. The only other candidate, Professor Michael MacCormac of

business administration, withdrew in the early stages of the contest.

Dr. Masterson's own discipline is the philosophy of religion. Some outsiders saw his appointment as head of a modern university fighting for funds as something of an anachronism but to UCD academics his rise to the top was inexorable.

He has served on several education bodies including the Higher Education Authority, the senate of the National University of Ireland and the governing council of the European University Institute in Florence.

One of his priorities is to tackle the embargo on filling academic posts. "Only 1 per cent of our academic staff is under 31 years of age and only 10 per cent is under 36 years of age. We need new blood as very able young people are being denied oppor-

unities," he says. He proposes some new system of postgraduate awards to allow bright young graduates to do further research and teach.

In effect he wants to restore staff morale which he feels has been badly hit by the cuts of recent years. He also wants to build on the many achievements of his predecessor, Dr. Thomas Murphy.

The new president has expressed concern that high levels of tuition fees may be forcing some students into long hours of part-time and weekend work.

He has stated that he is willing to recommend to his colleagues on the Committee of Heads of Irish Universities that they take up the question with Mr Paddy Conney, the new education minister, appointed in a recent cabinet reshuffle.

Education blamed for country's ills

from Geoff Maslen

MELBOURNE

Australia's education system is to blame for many of the nation's economic ills, according to the federal government's economic planning advisory council. In a study which alleges that inadequacies in education are barriers to economic growth, the council says secondary and higher education institutions are not providing sufficient depth and breadth of skills for industry in an age of high technology.

The council says that in the long term there must be a substantial re-orientation of existing school and post-school education and training systems' practices and objectives. The present education and training system has failed to provide the workforce with the skill base of other countries.

Australia ranks behind Japan, the United States, Britain and West Germany in the number of people involved in education to the end of secondary school, enrolled in tertiary degree courses, or undertaking technology-related courses. The council argues that the depth of skill in the workforce could be improved in the short term by expanding immigration of people with business and technological skills.

Set up by the Labour government in 1983, the council has not had a marked effect on developing economic policy and its assertions in its latest paper have created much controversy about the purpose of education. Its recommendations, however, are likely to meet with sympathy in government circles, reflecting the dominant ideology that it is possible to make education more relevant to the nation's economy without spending more money.

This can be done in one way by transferring resources devoted to primary education, under contraction because of a fall in the Australian birthrate, to the secondary system which is expanding in the upper years as more students stay on to complete 13 years of schooling.

As one critic has pointed out, implicit in the paper is the view that education expenditure is an investment rather than a consumption because there are external benefits to the economy of education spending beyond the direct benefit to the individual.

By most common measures, the council states, Australia's labour force lacks the education-intensive skill base of many developed countries. These factors have in turn contributed to the nation's poor average productivity, periods of significant loss of international competitiveness, and the relatively slow improvement in living standards and delayed 'achievements' of social objectives.

To improve the quality of school-based education without spending more money, the council favours expansion of compulsory core subjects, and the abolition of zoning, which limits the schools students are able to attend so that there would be more competition between schools. This would lead to the development of centres of excellence which catered for the various needs and demands of students and their parents.

Differential pay gains ground

from William Norris

WASHINGTON

The move towards differential faculty salaries is gaining pace in the United States, driven by heavy demand for professors in such fields as business, engineering and psychology. Universities with limited funds, fearing the loss of valued faculty to their competitors, are giving the major share to those with the most marketable qualifications.

Some are developing new wage scales, similar to those used for medical and law faculties, for fields where professors are in great demand. Others are directing more money to fewer people, boosting salaries in departments where wages have fallen behind those paid in the same specialties elsewhere.

And even on campuses where unionization has traditionally meant across-the-board pay rises, new collective bargaining agreements are increasingly including provisions for differential salaries.

The trend is having a serious effect on faculty morale. At Indiana University, where some departments have been allocated nearly four times as much for average salary increases as others, a recent meeting of the full faculty described it as demoralising.

According to figures compiled by the American federation of teachers, members of the psychology department at Indiana have received average increases of 20.4 per cent this year – more than \$7,500 each. In the theatre arts department, which is part of the same college, the average increase was 4.1 per cent – \$1,350.

The disparity brought the Indiana professors together for their first meeting since 1969. They complained bitterly that the new arrangements were totally arbitrary and unfair.

"The least meritorious faculty in the target units have a better chance of a raise than the best faculty in the untargued units," said English professor Sheila Lindenbaum. She described the impact on morale as devastating.

But Indiana's problem is clear: unless the university does something to improve the position of its marketable professors, it will lose them. In 1983/84, more faculty on a Bloomington campus received outside offers than ever before – some at salaries 50 per cent higher than they were earning. The resentment of the "have-nots" is likely to lead to a more sophisticated system of distributing the money in future, but the general policy will continue.

At universities in Washington state, the situation has been even more extreme. Faced with a slump in the local economy, the state legislature allocated \$8.3 million to faculty increases at the University of Washington and Washington State University, but insisted that all the money be used to "reduce critical market disparities". The result was that 51 per cent of the

professors received rises of up to 14.6 per cent, while the remainder got nothing.

The universities were lucky at that: all other state salaries were completely frozen. But Washington's professors were still irate. Several have filed age-discrimination complaints, charging that they should have been eligible but were told they were not marketable because they could not get outside job offers at their age.

Although the protests at Indiana and Washington have been the loudest, they are unlikely to be the last. The university systems in Michigan, Wisconsin and Illinois, have all begun to restructure their salary systems to make sure they are competitive with their peers.

California has set up a separate salary schedule for "hard to hire" disciplines, which currently comprise computer science, all engineering departments except agriculture, and all business departments except business education and economics. Assistant professors hired in these fields are paid 22 per cent more than those in other departments, associate professors 11 per cent more, and full professors 8 per cent more.

"It's a whole new ball game," says W. Lee Hansen, chairman of the American Association of University Professors, committee on the economic status of the profession. "People are groping, trying to find a way to deal with these market forces."

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The CIA decides to reveal all

The Central Intelligence Agency, whose support of academic research has caused two recent scandals at Harvard University, has decided to come clean. Scholars who get CIA funding will in future be allowed to acknowledge the fact publicly, and fewer of them will have to submit their manuscripts for pre-publication review.

The change in policy was announced by Robert Gates, the CIA's deputy director for intelligence, who said it was being made to gain the co-operation of the academic community and to allay their suspicions. Acknowledgement of funding would be permitted unless the scholar concerned requested privacy, or the agency decided that the revelation would "prove damaging to the United States".

Ironically, Mr Gates chose to make his announcement during a panel discussion at Harvard's John F. Kennedy school of government. Following the resignation of the university's director for Middle Eastern studies after disclosure that he had accepted CIA funding, Harvard is currently investigating the propriety of a second professor's behaviour in writing a paper for the agency without telling campus authorities. The investigation was revealed in the *Crimson*, Harvard's student newspaper, on the day that Mr Gates spoke.

Reaction to the new policy has been mixed. Though scholars generally seem to regard it as a step forward, there are still concerns about the threat to academic freedom when the CIA sponsors research. The *New York Times*, in an editorial, claimed: "The escape hatches puncture the credibility of the CIA's avowals of candour. Given its reflexive passion for secrecy, the agency can be counted on to scent damage to its image, the most innocuous information."

New Nordic institute for Greenland

from Christopher Follett
COPENHAGEN

Greenland, Denmark's vast teardrop arctic territory, is to have a new Nordic Institute. Education and cultural ministers of the Nordic Council, the political organ linking the five Nordic countries – Sweden, Norway, Denmark, Finland and Iceland – and their dependencies decided at a meeting in Copenhagen to allocate Dkr 1 million towards the initial costs of the establishment of the new institute, to be located in Godthaab, the capital of Greenland.

The aim of the new institute is to strengthen cultural links, co-operation and understanding between Eskimo Greenland and the Scandinavian countries by means of education, research and information. Further and higher education courses at the institute will concentrate on Nordic and Eskimo subjects.

The new institute supplements Greenland's own Inuit (Eskimo) College, opened in 1983, with 14 students initially, also in Godthaab. The Inuit institute turned out its first batch of graduates in January. Like its sister organisation in the North Atlantic Faroe Islands, it is a preparatory or preliminary university, offering one or two-year introductory courses in Greenlandic and Eskimo language, literature, history, culture and civilisation, to an academic level corresponding to a subsidiary subject in a BA degree.

Graduates from the Inuit Institute in Godthaab can continue their studies for full degrees in universities in Denmark and Norway.

Greenland, the world's largest island with a population of only 50,000, gained home rule under the Danish crown in 1979 and a post-devolution education bill of 1980 handed over the running of educational affairs to the local government in Godthaab.

Students quit over Tamil 'harassment'

from D. B. Udalgama

COLOMBO

Nine Muslim students of the University of Batticaloa have been compelled to give up their studies because of harassment and intimidation by Tamil "terrorists".

"Maybe the 'terrorists' are there but one cannot run away just because of some youths who have taken to arms. They (the students) must learn to live in that atmosphere the way other Muslims, including third and fourth-year students do," Mr Dewanyagama was quoted as saying. Half the staff in the university were Muslims and to date there had been no complaints from them.

The Muslim organization said that the education of the Muslim students at Batticaloa was being "bedevilled" as a result of a series of incidents of violence both in the university and outside. The undergraduates were the victims of a series of incidents of not being able to publicize the incidents or complain to the authorities for fear of consequences.

It also said that even the state protection of the armed forces could not continue to function had to be sifted or closed down. How then could undergraduates be expected to pursue their studies in prevailing circumstances?

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overseas news

University challenge for Brazil

by Fay Hausmann

More than half a million candidates competed this year for the 126,000 undergraduate places available at Brazil's most important public and private universities, while thousands tried their luck at hundreds of small, isolated professional institutions.

All this flurry of activity also marks the resumption of the cyclical controversy about the role of the country's universities.

Nearly a decade since Brazil's "economic miracle", conservative educators scoff at the market-oriented expansion of higher education during the 1970s.

The military government and its technocrats, the argument goes, projected chimeric manpower needs for over-ambitious development goals, further spurred by the pressures of Brazil's urban middle class, which saw in schooling and professionalization the chief avenue of social mobility for its children.

At the start of the military government in 1964, Brazil had 37 universities and 564 isolated faculties. Now under the "new republic", the respective numbers are 67 and 801, of which nearly 75 per cent are private with widely divergent educational standards.

In 1982, about 300,000 professionals graduated from Brazilian universities and professional faculties, far more than labour markets could absorb, particularly since the "miracle" had been succeeded by a severe economic depression.

Moreover, statistics showed that pressures were critical in the south and south-east, where three-quarters of Brazilian professionals, including doctors, dentists and engineers, are concentrated.

Last November, the *Jornal do Brasil* published the story of three street-cleaning graduates in Rio de Janeiro. They were university graduates, one a professor of philosophy, another of mathematics, and the third had a masters degree in pedagogy.

Critics fault students' purely technical training, which is devoid of the scientific basis that would make them more adaptable to the rapid changes in labour market needs.

But whatever the cultural and philosophical considerations, the professional training itself seems often to be inadequate. Brazil's economy is expanding again, and so is the labour market, but employers willing to hire recent graduates look for more than theoretical and technical knowledge which is all most of them have acquired.

One effort to bridge this gap is now being made in São Paulo. An association headed by Price Waterhouse, an enterprise consultants has set up a short-term programme of training with intensive courses for selected graduates recruited at their universities.

Groups of future economists, managers, engineers and accountants among others are given seminars in topics such as enterprise and the graduate, the professional and professionalization, the entrepreneur and his enterprise, state and national enterprises, the multinationals, and how to tackle the labour market. Costs for the course are divided between universities and future employers.

China sees tough times ahead

by Geoffrey Parkins

The Chinese state council's technological, economic and social development research centre has recently completed a huge two-year research project on the nation's prospects for the year 2000.

A 400-strong group of leading academics and specialists which considered a broad range of fields including education, science and technology, economics, population and employment, predicted that China's future was generally promising but there would be "tremendous difficulties" along the way.

Within the next 15 years, they said, China was likely to "lead the world" in a number of fields, including "mathematics and astronomy". In micro-electronics, mechanics, oil and petrochemicals, China should be equal to the rest of the world, and the level of

Research must pay its way

China's universities, research institutes and enterprises have been invited to compete for 76 contracts listed by the Peking government as the country's key scientific and technological projects during its seventh five-year plan (1986-90).

Under the scheme, contractors on basic research projects will be required to cover their own expenses by taking out loans, which will be paid back or adjusted according to the profits of benefits generated.

The move comes after the state council's decision last year to change the way universities and institutes are funded for scientific and technological research in an effort to make more effective and rational use of resources.

The state council's stipulation states that spending on research and

technology in the country generally would be at the standard reached by the developed nations now.

Education up to middle-school level would be universal, while the number of graduates and postgraduates would probably have reached 10 million. The group, funded by the state council and social sciences academy, also predicted there would be around 9.3 million qualified scientists and technicians in China.

While the country's population would jump to between 1.25 and 1.28 billion (around 10.5 per cent of the world's population), living standards would have improved well above the level of "satisfying basic needs" to a level currently enjoyed by China's urban middle-class minority, although large variations were likely to remain.

If economic possibilities were realized the group predicted that China's economy would rank fifth or sixth in

the world, although because of population size its per capita output would still be low, placing it in approximately 133rd position.

But the group warned that China would remain an "imbalanced nation" in many ways. While it was recognized that each region would largely have to work out its own progress, the existence of huge differences in educational provision and technological development was clearly undesirable.

But even more worrying, as some educationists had recently pointed out, were the risks attached to developing an education system where different levels were out of phase.

As He Dongchang, vice minister of the state education commission, recently observed, unless standards of teaching and learning in the schools were raised substantially, the educational level of students entering the colleges and universities would not be high enough to meet the country's manpower needs.

Only when "elementary and higher" education were synchronized and developed to suit economic growth, social and technological advances, said the group, could the country be sure of overall success.

The experts stressed that China must "realize the seriousness of the situation it faces now". Despite its huge landmass, large population, rich cultural heritage and vast material and human resources, China was economically and technologically disparate.

While the east of the country had a massive manpower capability, it seriously lacked natural resources. In the west, the situation was completely reversed. Despite great economic and cultural improvements, "overall development remains low. Basic facilities in urban and especially rural areas were 'inadequate and unsystematic'."

If present trends continued, the group predicted that huge gaps in living standards between different parts of the country would remain.

Gorbachov cursed by drinking classes

A leading Georgian scholar has published a carefully worded but unequivocal criticism of Mr Gorbachov's anti-drink policy. Unlike a former Soviet campaign against alcohol, the latest version attacks not only distilled spirits, but also beer and wine.

M. Kekelidze, deputy chairman of the scientific co-ordinating centre for problems of socio-cultural traditions of the Georgian Academy of Sciences, says in the journal *Kommunist* that instead of campaigning against the drinking, Georgian scholars should study to the rituals surrounding it.

Kekelidze's stand is remarkable in that, having been a Soviet Union, leading academician, he has been pressing the local anti-alcohol campaign.

He says that throughout the centuries there have been two approaches to drunkenness - legislation and moral customs. Laws are necessary, he admits, in countries where alcohol is not considered to be the "social life", and where they have been introduced from abroad. In Georgia, however, the "home of the wine", such measures are required, he argues, because Georgians are going to drink themselves to death, he argues, they have done so long since.

"Specialist scientific literature", according to Kekelidze, now depicts Georgia as the cradle of wine-making. The Georgian word *vino*, distant alien tongue, has named the drink throughout the world.

Ancestral Georgian traditions on the side wine to be medicine - but like medicines, a poison in excessive quantities - hence various national customs have arisen to ensure moderate consumption.

In Svaneti province, for example, the old way still survives that, for the traditional equivalent of the bread, three drinking vessels should be set before each participant - and the vessel drained only once.

Such customs, says Kekelidze, should not only be studied by ethnographers but also reintroduced through Georgia.

Old customs concerning the proper consumption of wine at weddings, funerals and similar celebrations should, he urges, be the subject of detailed research. Only so will the incorrect use of alcohol, and its "devaluation" of wine and its role in Georgian national culture, be changed.

These last remarks are clearly not of the vodka-drinking habits of Russians, although Kekelidze mentions them by name. It is only a couple of years ago that Gorbachov celebrated the 200th anniversary of incorporation into the Russian empire.

Criticism of Moscow policy, however, is clearly apparent in Kekelidze's Georgian wine is now being exported "everywhere before our eyes" - due, it is implied, to the industrialization of the wine-making process - and the emphasis that he places on the Georgians' traditional love for the wine.

Thunderbirds are Go!



Their habitat is world-wide, but they breed only in the Arizona desert, on 160 mainly barren acres to the north-west of Phoenix. There, nourished by a diet of mystic surroundings and gathering strength and skill to fly to faraway places. They call them the Thunderbirds.

The description may seem unusual for an international business college, even fanciful. But then the Thunderbird campus of the American Graduate School of International Management is a highly unusual place. No many graduate schools in the United States inhabit the hangars and barracks rooms of an abandoned wartime airfield, fewer still have coffee shops where you can eavesdrop on conversations in Arabic, Mandarin, Japanese and German. None that I can think of has Thunderbird's singleminded purpose: to produce true internationalists, and to rid the world of the ugly American.

Only one degree is offered: Masters of International Management (MIM). It distinguishes the Thunderbirds from the thousands of graduates who pour out of America's 891 business schools in an ever-increasing stream, bearing MBA (Master of Business Administration) degrees of varying quality and prestige. The MBA is becoming something of a drug on the market. The MIM, because of Thunderbird's small size and unique input, never will.

At least, that is the hope of William Voris, president of the school for the past 15 years, and the man who has built it from obscure beginnings to a college with a truly international reputation. He claims with some pride that it is better known in Brussels than in Phoenix - the Phoenix suburb which has drifted across the desert to surround Voris's campus.

Dr Voris, a handsome, charismatic man, with a face the colour and texture of an Arizona cliff, is universally credited with being the driving force behind the success of Thunderbird. When he took over it had been in existence for 25 years, but there were fewer than 300 students and no endowment funds whatever. Today the stu-

dent body numbers around 1,000, and there are \$4 million in the bank.

It is still not enough; a fact which highlights one of Thunderbird's perennial concerns. The college's short history means that most of its alumni are still climbing their career ladders and are not in a position to be generous. They also, because it is purely a graduate school, have at least one other university calling on them for donations. Thunderbird therefore has to be largely tuition-driven, which means that it depends on the fees paid by students (around \$12,000 a year) to exist from day to day. Over the next two years those tuition fees will increase by 25 per cent - which may well cut down the number of students and therefore bring in less money than is needed.

Dr Voris, who gives the impression of not worrying about anything, is fairly unconcerned about this. One reason for his confidence is the fact that having bought the site from the Government as war-surplus for \$1 many years ago, the college now finds itself possessing around 100 acres of real estate which it does not need, and which the westward sprawl of Phoenix has increased in value to about \$9 million.

But even without this happy circumstance, the prospect of a declining enrolment is viewed with equanimity. The emphasis of Thunderbird is on quality rather than quantity, and William Voris has no wish to expand - at least on the present site. The possibility of opening other campuses elsewhere, though, does interest him.

Both Ellis Island and Alcatraz have been seriously considered, but a board of trustees which is curiously elderly and unadventurous for college which boasts of encouraging risk-takers has so far been unwilling to take the step.

The conservative nature of his board, though improved by the recent addition of faculty members, is one of Dr Voris's problems. Another, possibly more serious, is the criticism which has been levelled at Thunderbird for paying attention to languages and other international aspects of its course, at the expense of formal business education. Number-crunching, as it is known in the trade.

Dr Voris's answer has been to add the clearest to the curriculum, without taking anything away. As a result the MIM degree, which could previously be obtained by a single year of study, is now likely to take 18 months or even

The boast of America's top business school is that it is better known in Brussels than its home of Phoenix, Arizona. William Voris visited the campus that prides itself on its internationalism



Le Canard Enchaîné and Dr William Voris (above): both essential reading

sian, curiously, is not offered. They also take advanced courses in world business, including accounting, computer systems, statistics, management and marketing, and studies in current international economic, social, political and cultural conditions.

It all adds up to a fairly gruelling programme, and there are also opportunities for students to spend a term studying at business schools in Mexico, Japan, Norway, France, Germany, Spain or China.

Even the bar at Thunderbird - a converted hangar where the students gather every Thursday night - has an international flavour. There are more than 20 different brands of beer on offer from around the world, including Watney's draught, and the drinking songs are belted out in all eight languages.

One Italian student told me: "When I come through the gates I feel I am leaving the United States, and entering the world." William Voris would be pleased to hear that. It is what Thunderbird is all about.

al companies. Some 110 are currently employed in Britain. The result has been to set up an almost Masonic chain of contact, with former students boosting the school, encouraging others to go there and helping to provide fresh job opportunities.

It is easy to dismiss the "Thunderbird mystique", as they like to call it, as a public relations ploy. It may be difficult to define, but it certainly exists. The students, 26 per cent of whom come from more than 60 overseas countries, are undoubtedly a different breed. Their belief in internationalism, such a contrast from the narrow, introverted outlook of so many American business students, shines through the briefest conversation. And their loyalty to the school is intense: it is hard to provoke a word of criticism. In an hour-long interview with a dozen of them, the most I could extract was a grudging admission that some faculty might be better than others. Not one felt that they were not getting value for money.

What they get is a choice of eight languages, taught by the audio-lingual method, by native instructors. Japanese and Mandarin are the present favourites, and full conversational ability is required for a degree. Rus-

How barriers to the study of change in East Europe are being broken by sociologist Elemer Hankiss

"It's a privilege for some people to balance on a tightrope and mark on the margin between the legitimate and the illegitimate."

Hungarian sociologist, Elemer Hankiss, is describing his own situation. A member of the sociology department of the Hungarian Academy of Sciences he has never felt any pressure from his own institute but in the matter of publication he has always experienced difficulties. His latest researches, as yet unpublished in full in Hungary, concern his current concept of the "second society".

Unlike the "second society", the "second economy" is a well-worn phrase in Hungary. It describes the network of connections, private dealings and black market operations which emerge in any economy of shortage. In Hungary, however, recent years have seen a legitimization of these activities and an attempt to integrate them into the official, first economy.

The result has been an upsurge of private enterprises in the retail and services sectors plus the encouragement of employees in state employment to form co-ops to contract privately for work while retaining their official employment. Thus in Hungary today a number of economic paradigms operate simultaneously, ranging from strict central control through to free market forces.

Hankiss's theme is that partly as a result of the "second economy" new paradigms are emerging which are "proto-pluralism" within the one-party system. The implications of this process for an Eastern European society and for more general conceptions of what a socialist society is.

The "second society", according to Hankiss, operates according to different rules from the first. It stands for differentiation rather than homogeneity. Its relations are horizontal and

ascendant rather than vertical and descendant. The "second society" is informal and diffuse; the first is formal and centralized. Unlike the "second economy", which is necessary for the functioning of the economy as a whole, the "second society" tends to be invisible and on the borders of illegitimacy.

As examples or symptoms of the "second society" Hankiss points to the vast increase in the number of clubs and associations which have sprung up in Hungary in recent years - clubs for people with common interests or common goals. He cites in particular those with a "green" orientation in the ecological sense of the term - environmental protection groups, trusts for preservation of historic buildings, farmers' clubs and other citizen initiatives.

He also cites and regards as significant the fact that people in several local areas and some districts of Budapest have voted against the provisions of local contribution taxes necessary for the fulfilment of local authority plans. Such a rejection is virtually unknown since the end of the war.

Also in the political sphere, he regards as important events during last year's parliamentary elections. For the first time in years a new law stipulated that every constituency should be contested by at least two candidates. In approximately 70 of the country's 232 constituencies popular nomination meetings added a third, "unofficial" candidate to the list.

"Society is slowly waking to the fact that people can do something for themselves," says Elemer Hankiss. "The second society" is emerging partly also in response to changes in the first, or official, society. One of the most noticeable aspects of this change has been the shift in the function of ideology.

In the 1960s the Hungarian elite realized that things did not go according to the ideology and that if they or

the country were going to survive, they would have to become more pragmatic. Today there is no more flight from ideology because the elite is pragmatic and cautious. Lip-service to ideology has virtually gone and repressive ideology has certainly gone.

But what of new formations in the "second society"? Are new ideologies emerging here?

"Sub-culture and alternative world views do exist in Hungary but they don't have room to formulate themselves or affirm themselves. There are, for example, ideologies of social democracy, middle-class radicalism, technocracy and a national-romantic historical awareness. These are moving and affecting people. But all are vague. There is no room and possibility for formulation, no interaction. Hatreds and misunderstandings occur. There is no healthy exchange of ideas."

Hankiss is at pains to emphasize that the first/second society dichotomy is in no way clear cut and that the rules and norms of each cut both across institutions and through the lives of individuals, such that a person's life may be lived according to several different social paradigms.

"A citizen may work in a state-controlled factory as a wage labourer. He then goes home and may work in some family enterprise for the market under a different set of norms. He then may have to approach the town hall for permission to construct some building and he approaches there as a 19th-century scared subject of an almighty bureaucracy as if in an absolutist state. Perhaps also he wants to send his son to university so he goes to find a client in a neo-feudalist society."

The debate about different interests

In Hungarian society and how they are to be represented is currently widespread in the media and not just of concern to sociologists and political scientists. In the 1950s there was only one interest recognized - socialism, or what Hankiss calls "the utopia of the elite" and, linked with this, the elite's own interests. In the mid-1960s, he argues, there slowly emerged an acknowledgement of some group interests. Nowadays one can freely speak about different group interests, for example the pro and anti-reform lobbies. However, he adds a cautionary note.

"The elite today assumes every major interest is already catered for in existing institutions such as trade unions, the co-operative movement, the women's council and the youth organization. It's therefore difficult for others outside this nexus. But some do exist such as the green clubs."

There is of course the danger that new initiatives will be absorbed by such older-established bodies as the People's Front, a non-party, though party-influenced, umbrella organization drawing citizens into involvement in public affairs. But even here things are not clear cut. Five years ago the People's Front was nothing. Now important initiatives are protected by the Front, particularly its national committee. Hankiss points out that during last year's elections the Front played a big role in informing people of their democratic rights under the new electoral law.

The development in the People's Front is an aspect of what Hankiss calls the interactive model for change in Hungary. Official society or the state changes, society makes a move in response, then official society responds in turn. It does mean that change in Hungary occurs in fits and starts, but change is definitely occurring.

Bob Dent

Germans try to treat medical student glut

from Barbara von Ow

MUNICH. West Germany's 60,000 entrance certificate (*Abitur*) holders have sat a five-hour aptitude test for medical studies as part of a major revision of admission procedures which becomes effective this year.

The exam, introduced by the culture minister's conference in March 1985, will become mandatory for all wanting the coveted places in human, dental and veterinary medicine.

From the winter term of 1986-7, 45 per cent will be allocated on the combined results of the *Abitur* and special aptitude tests. Another 10 per cent will go to the best performers in the extra exam.

In another controversial amendment, 15 per cent of the applicants will be chosen by the universities themselves in personal interviews, the first time such a system has been implemented in West Germany.

Another 20 per cent will be selected according to the time they have waited to be accepted. The last 10 per cent is a fixed quota for foreigners and special hardship cases.

This is the second major revision of the relations introduced to stem the tide of students in the 1970s. Despite these measures, the number of doctors has more than doubled to 156,000 in the past 25 years.

It is estimated that another 110,000 medical graduates will be leaving the

universities by the mid-1990s. However, in the next 10 years, only 33,000 jobs will become available through retirement and another 22,000 because of new doctors - mostly women - who will not practice their profession.

This means that at least 55,000 new medical jobs would have to be created to prevent unemployment growing among the West German medical profession.

The new admission procedures are designed to stem a further rise in the number of doctors. The aptitude test, which has been organized by the central admissions agency in Dortmund, is particularly designed to select students on criteria other than good marks at school.

However, the test - which has been under trial for several years - has attracted considerable criticism from several sides. The trade unions say that 80 per cent of the questions examine knowledge already tested in schools. The national students' association claims the test does not ensure equal chances for all candidates and says little about the applicants' ability to become good doctors.

Meanwhile, the interest in medical studies continues to be unabated. This term there were 30,000 applicants for 6,700 places in medicine, about a 4-1 ratio. In dental and veterinary medicine, there were seven applicants per place.

Inquiry on the role and function of the UGC Trampling on hallowed ground

A century ago Walter Bagehot distinguished between the "dignified" and the "efficient" aspects of the Victorian constitution. In his view the two were complementary; the mask of dignity provided by the fictitious continuity of royal and aristocratic government allowed the real constitution with its competing interest groups to operate more efficiently.

Applied to the University Grants Committee, at present under review by the Croham committee, the Bagehot analysis breaks down. There is certainly a growing dislocation between the "dignified" and "efficient" constitutions of the UGC, between the theory and the practice of its power.

But far from a harmonious complementarity it has produced alarming uncertainty about the modern role of the UGC. Its "dignified" constitution now almost entirely ossified into irrelevance, gets in the way of proper understanding of how the UGC works in 1986. It enables the real string-pullers to remain concealed and has obstructed attempts at reform. This retrospective vision of the UGC as a dignified buffer between the state and the universities dispensing an adequate and even-handed largesse still has a tenacious hold on the affections of many university leaders. It is difficult for them to envisage a better UGC than the one they have lost.

Yet it is precisely such a new model UGC that the universities now have to contemplate. As a result of a recommendation in last year's Jarratt report on university efficiency Sir Keith Joseph, the Secretary of State for Education and Science, has set up a committee to investigate the future role of the UGC. The committee's chairman is Lord Croham, who as Sir Douglas Allen was head of the Civil Service.

The first indications were that Croham would be a nuts-and-bolts inquiry that confined its attention to tinkering with the details of the UGC's operation and did not attempt to reform its constitution. But Sir Keith gave the committee unexpectedly wide terms of reference which excluded nothing but consideration of the Department of Education and Science's rôle, an overreaching body to plan all higher education. The latest indications suggest that the Croham committee may even trespass into this forbidden territory.

Lord Croham is conducting his inquiry at a brisk pace. Evidence has already been taken from the main participants, like former UGC chairman, and protagonists, like the vice chancellors. The report of the inquiry is expected in the summer. What once seemed to be a limited exercise in the administrative modernization of the UGC now has the potential at any rate to strip away the mask of its dignified but outdated constitution.

The early history and formal standing of the UGC are well known – maybe too well known. The committee was established in 1919 by a Treasury minute which stated that its purpose was to advise the Government about the needs of the universities. The intention in these early years was to put off a more regular footing the ad hoc subsidies that had been paid to universities before the First World War by R. B. Haldane's University Colleges Committee and later the Advisory Committee on University Grants.

It started as a limited operation. Even as late as 1939 only a third of universities' income came from the state; the rest was still provided by tuition fees, industrial subsidy and public philanthropy. The grants provided through the UGC were intended to make up the difference. Before 1945 the UGC had little stake in planning. Its role was seen as simply to manage the state subsidy to the universities, hence its accountability to the Treasury rather than the board and later Ministry of Education.

The job of the UGC did not change radically even after 1945, although its terms of reference were extended to include a reference to the needs of the nation to balance the 1919 emphasis on the needs of the universities. But the commitment of the UGC to planning in anything approaching a modern sense remained persuasive and even passive until the need for new universities became urgent in the later 1950s.

The golden age of the UGC was really from 1955 to 1975. The expansion of the university system had led to a rapid increase in the grant provided by the Government and administered by the committee. Rival sources of income dwindled into insignificance leaving the UGC as an all-powerful paymaster; yet the Government continued to respect the autonomy of the universities and to accept the rôle of the UGC as an unaccountable arbiter of their needs.

So was born the classical theory of the UGC's function and operation, which many foreign observers so much admired and which continues for many British university leaders to be bathed in nostalgia. According to this theory the Government wrote the UGC a blank cheque, well almost, the proceeds of which the committee distributed among the universities according to unwritten but unchallengeable rules of merit. This happened at regular five-yearly intervals, the so-called quinquennium. Individual universities were guaranteed a regular inflation-proof income.

All this is now of merely antiquarian interest. The stately succession of quinquennia has been rarely interrupted. Since the 1970s the Government has ceased to pay effective attention to the UGC's assessment of the universities' needs. Indeed the attenuation of the committee's primary



The terms of reference of the Croham committee are: "To review, within the context of expected developments in higher education, the University Grants Committee's constitutional position and rôle in relation to the Government and to the universities, its membership, its internal structure and working methods, and its secretariat."

role probably goes back further, to the transfer of university funding from the Treasury to the new Department of Education and Science in 1964 and the increasingly integrated planning of public expenditure in the later 1960s. The secondary rôle of the UGC, the distribution of the grant to individual universities according to academic rather than political criteria, was sustained a little longer. Even in the crisis of 1981 the UGC took its own decision about which universities should suffer and which should be spared from the cuts which the committee had been powerless to prevent. The DES was

kept at arm's length, which seemed to many a constitutional anomaly when billions of pounds of public money were at stake.

That will never happen again, as the former chairman of the UGC Sir Edward Parkes admitted in a valiant address to the vice chancellors. Having lost its primary rôle as the authoritative adviser to Government about the needs of the universities and become no more than an influential lobbyist compromised by more than a whiff of special pleading, the UGC now has been made accountable to the politicians for the discharge of its

secondary rôle, the distributed grant.

The new chairman of the UGC, Peter Swinnerton-Dyer, has seen the inevitability of this further erosion of the committee's independence. He no longer even pretends to be the DES at arm's length but, predecessors, and has thrown his enthusiastic into the game, playing by ministers' and departments. The UGC can no longer be the politicians so it has had to

Through all these great changes the rôle of the UGC's constitution remained unchanged. Its chair always an academic although technically a second permanent secret in the DES, and its members appointed by the Secretary of State practice the academic members of the UGC, who are in the great majority, are appointed by the chairman. Little room for manoeuvre because the need to find chairmen for the UGC's many subcommittees and because of the need to maintain regional balance. The lay members of the UGC who are drawn from stereotyped classifications (the education officer, head teacher, industrialist and so on) are chosen by the DES from the now somewhat feeble of the great and the good.

UGC officials are civil servants. Once they came from the Treasury, today from the DES. Because formal the chairman is also a civil servant secretary of the UGC is of a lower rank which tends to depress the hierarchy within the organization. Although no real doubt has ever been expressed about the loyalty and independence of UGC officials, the fact that they are DES civil servants who depend on that department's patronage for their future careers is a potential embarrassment. Any suspicion is that the committee's full-time chairman and a part-time full-time chairman and a part-time full-time chairman form a part of the civil service hierarchy. The ordinary members of the UGC find this difficult to accept.

The question that the Croham committee must address is simple: is the UGC's traditional constitution relevant to the very different rôle it has been thrust upon? If not, what is the question there are five issues that have attracted attention.

The first is the informality of the UGC's status. The committee is founded by a Treasury minute and an Act of Parliament. Its powers



Sir Peter Swinnerton-Dyer: Inevitability of attenuation

based on convention not on law. The Government is not even under any legal compulsion to distribute the grant in the manner decided by the UGC. Nor does the UGC have any legal powers over individual universities. On the other side of the binary line, the National Advisory Body advises the Secretary of State on the exercise of the powers he already possesses over advanced further education.

Today there is a strong feeling that the UGC's duties and powers should be put on a more regular footing. The former consensus has been stretched and strained at too many points to trust its future effectiveness. A modest demand is that the UGC should be re-established under a Royal Charter. A more radical suggestion is for a Universities Act to codify the complex relationship that may exist between universities and the state.

The second is the UGC's membership. At present the members of the committee are still dimly regarded as a kind of grand jury made up of the shock of 1981 when Sir Edward was the chairman and the growing politicization of the committee under Sir Peter rather carping criticism is that the UGC is sometimes made up of the not-so-great and not-so-good. Another more reasonable comment is that the complexity of the modern university system and its inevitable divergence of goals can no longer be contained within an informal consensus.

So the call is for the UGC to be more representative. Those who support this change point out that the NAB has a representative membership yet seems to display an equal or superior dynamism. It is also pointed out that the UGC has become a political body and that it can no longer have political members. This point is made with particular force about the committee's lay members. Nor, according to this view, is it reasonable for the UGC to maintain its tradition of confidentiality and secrecy.

The third is the continuing need for an elaborate system of subcommittees. The UGC has always leaned heavily on its subcommittees and their importance has intensified with present strategy to develop a selective research strategy. Yet some have questioned their necessity, at any rate in quite such a sophisticated form. Their existence has tended to neuter debates in the main committee because all of the academic details get sorted out by the subcommittees while the high politics are managed by the chairman in informal

negotiations with the DES.

The fourth issue is the UGC's secretariat. The criticisms here are that civil servants are instinctively loyal to their service and so find it difficult to be partisans for the universities; that they lack direct experience of university life; and that they do not give sufficiently prescriptive advice to UGC members. The answer for many people is to scrap the Civil Service connection and to staff the UGC with its own officials, drawn principally from university administration. A more gradual solution is to retain the Civil Service link but to recruit many more university administrators on secondment, and at a senior level.

The fifth issue is the relationship between the UGC and those bodies that plan the rest of higher education, the most important of which is the NAB. Croham can hardly ignore such an important dimension of the UGC's future rôle, however unwelcome some of these education may be to the DES. Any lingering hope that the UGC could be left to manage the universities as a self-contained sector disappeared at Christmas when the Scottish Tertiary Education Advisory Council recommended that the eight Scottish universities should be hived off from the UGC system.

The minimum solution, now barely credible, is to hope that periodical meetings between the UGC and the NAB board, or parts of both, plus private hob-nobbing by the two chairmen, Sir Peter and Mr Christopher Ball will produce an integrated higher education policy. The next option is a weak overarching body that acts as a forum in which the UGC, the NAB, and STEAC and others argue about their differences. If that fails to satisfy a higher education commission with effective powers will have to be considered. In any case it is not an issue that Croham can ignore.

On all five issues it seems probable that the Croham committee will reach more radical conclusions than either the DES or the universities expect. Much of the evidence submitted to the committee has strongly favoured the UGC principle, which most people interpret as a hands-off relationship permitted by practical politics. The Croham committee may conclude that the only way to preserve the UGC principle is to contemplate radical changes in UGC practice, which would be at any rate an interesting variation of Bagehot's contrast between the dignified and the efficient constitutions.

Peter Scott

Buffer between college and Government

In 1985 Sir Edward Parkes, former chairman of the University Grants Committee wrote to *The Times* to explain and defend decisions made by his committee in 1981.

That he was able to wait so long before going public, bound as he was by laws of confidentiality, gives an insight into how the UGC saw its rôle and accountability.

Unusually, education ministers felt as much hemmed in and irked by this UGC practice as anyone else, as they tried to deflect criticism of the 1981 cuts.

It was probably then that the need for a change in style and operation, with more openness, received a strong and fresh impetus, which still gathers force. It could not happen like that again, even with a less press-conscious chairman than Sir Peter Swinnerton-Dyer.

The UGC has changed willingly, from within, in the last five years. The emergence of the National Advisory Body for public sector higher education has also left its mark.

The UGC was established by Treasury minute in 1919 and has grown, unplanned, ever since. Then it was run by retired academics, distinguished men and women considered above the fray.

"A collection of old buffers" is the description given by present secretary Norman Hardyman, who says the early history of the committee abounds with telegrams reporting the sudden indisposition of members.

The "buffer" is of course used in a different sense, a buffer between Government and universities, not weak as in a buffer state, but strong and with a separate function of its own.

The members are appointed by the Secretary of State for Education and Science, who consults other education ministers. Most are serving academics, but there has always been a strong lay presence.

The Secretary of State can take advice from anywhere but his or her main sources are the Department of Education and Science and the UGC chairman, who in turn seeks advice from subject sub-committee chairmen.

Serving vice chancellors may not, by convention, be members of the UGC so, for example, when Gordon Higginson was appointed Southampton vice chancellor, he was asked if he could suggest a name.

On a UGC visitation to Salford the committee was harangued by the professor of romance linguistics who gave a polished, thorough and sustained critique of UGC policy towards his university. They were so impressed they asked Martin Harris to join them when a vacancy came up.

In choosing people an attempt is made to keep the balance between different types of university, between subject areas and (it is claimed) between men and women. There is currently one woman on the 19-strong UGC, a former headmistress.

"There are remarkably few women professors in the universities, 94 only to choose from," said Norman Hardyman. He was prepared to receive suggestions.

Members were originally appointed for five years, but now the period is four, to increase turnover and attract people who would like to serve, but for not such a long time.

Members should be distinguished academics and good committee people. It is like a club. "There is remarkable cohesion. People do get on very well. It has a sense of its own solidarity. It is not an institution where people representing differences come and argue them out."

"They do not fight their corners. They argue the case but they think of the good of the system and take the overview," said Hardyman.

The staff are almost all from the DES, and stay about four-five years. Some are seconded from the universities. The question of other people coming in say from industry or an accounting firm, has been raised but not actively.

"It is not as obvious an advantage to come in and pick up quickly a very different way of life. Someone from industry would find himself taking two years or so to get the hang of it."

One of the criticisms made of the UGC is that they are too close to the DES. "There is a feeling that because we come from the Department and are liable to go back to it, that we would temper our loyalty to the truth. You transfer your loyalty absolutely. You earn respect by the vigour with which you press the UGC position. I am getting a little bit excited here," said Hardyman.

The UGC meets monthly and holds an annual two-day retreat. Contrary to popular belief the committee does not ask its assessors (from DES, research councils etc) to leave when the affairs of individual universities are discussed.

But they are excluded when major discussions are held, such as the new allocation process being drawn up. Assessors do of course see all the committee papers.

Relationships with ministers vary according to the personalities. Sir Edward Parkes saw one minister hardly at all and another fairly frequently. Sir Peter may see a minister three times a week and then not for a fortnight.

There are much stronger informal relationships between UGC and DES officials. "In the past it was thought to be right for the UGC and DES to stand at a distance from each other."

"Now we have found it suits us not to keep at such a distance and to be a good deal more intimate. They are easier to be informal with and we have responded to that."

The UGC also meets NAB and the Wales Advisory Body and would like to deal with a similar body for Scotland.

"You might have thought that the UGC would see NAB as an upstairs, there to rub the universities of its privileges. But we have a very good understanding with them."

"We have set up a number of transitory groups. We look at the way they do things and we are forced to think about the public sector."

Norman Hardyman thinks it is facile to compare the UGC and NAB and says there is no difference between the way the two committees make decisions.

The committee keeps in touch with universities in several ways. Visitation, a day-long inspection, take place about every seven years. They give the committee an impression of the university as a whole and the chairman comments on particular features. They are also a public relations exercise for the UGC.

Territorial officers visit regularly and territorial groups have become more important as overseers of the subject subcommittees.

Vice chancellors and registrars drop in for chats at Park Crescent although, said Hardyman "some as a matter of policy seem never to darken our doors."

The subcommittees, about 100 people, are the centre of subject expertise. They also bring important issues to the attention of the main committee. Next week their rôle will be examined.

Ngalo Crequer

UGC terms of reference

To inquire into the financial needs of university education in Great Britain: to advise the Government as to the application of any grants made by Parliament towards meeting them; to collect, examine and make available information relating to university education throughout the United Kingdom; and to assist, in consultation with the universities and other bodies concerned, the preparation and execution of such plans for the development of the universities as may from time to time be required in order to ensure that they are fully adequate to national needs.

The current membership of the University Grants Committee is:

CHAIRMAN
Sir Peter Swinnerton-Dyer, FRS, formerly master of St Catherine's College, Cambridge.

MEMBERS
Sir Peter Baxendale, CBE, director, Shell Transport Trading Company;

Professor J. A. Cannon, CBE, professor of history, University of Newcastle-upon-Tyne;

Sir Robert Clayton CBE, General Electric Company, plc;

Dr S. Colson, deputy director, Leicester Polytechnic;

Professor C. T. Dollery, Royal Postgraduate Medical School, University of London;

Professor K. Entwistle, Department of Metallurgy, University of Manchester Institute of Science and Technology;

Professor A. J. Forty, professor of physics, University of Warwick;

Professor P. Haggett, professor of urban and regional geography, University of Bristol;

Professor M. B. Harris, professor of romance linguistics, University of Salford;

Mr R. S. Johnson, CBE, director of education, Leeds City Council;

Professor D. S. Jones, MBE, FRS, Ivory professor of mathematics University of Dundee;

Professor P. R. G. Leyard, professor of economics, London School of Economics and Political Science; Professor J. G. Morris, professor of microbiology, University College, Aberystwyth;

Professor R. Needham, FRS, professor of computer systems, University of Cambridge;

Mr W. D. C. Semple, director of education, Lothian Regional Council;

Professor J. Sizer, professor of financial management, University of Technology, Loughborough;

Mrs T. Thomas, OBE, formerly headmistress, Girls' Comprehensive School, Aberdare, Mid-Glamorgan;

Sir Malcolm Wilcox, director, Midland Bank, plc.



Norman Hardyman: "Good of the system"



Lord Croham: wide terms of reference given by the Secretary of State

	Team 1	Team 2	Team 3	Team 4	Team 5	Team 6	Team 7	Team 8	Team 9	Team 10	Team 11
General character of responsibilities	Sciences research & London	DTI activities	Medical & capital	Sciences & general restructuring	Continuing education & Northern Ireland	Humanities & student related matters	Financial efficiency & cost comparisons	Grant allocations	Statistics	Committee support establishments and payments	Buildings and program management
Committee	Physical sciences SC Biological sciences SC London University WP	Technology SC Mathematics SC	Medical SC Dental SC Panel on studies allied to medicine	Education SC Business and management studies SC Agriculture and veterinary studies SC	Standing committee on continuing education Northern Ireland WP	Arts SC Social studies SC		Equipment SC			
Territorial	London Brunel City	Bath Bristol Exeter Aberystwyth Bangor Cardiff Lampeter Swansea Ulster	Medical & dental capital projects at 20 universities	Aberdeen Dundee Edinburgh Glasgow Heriot-Watt St Andrews Stirling Strathclyde Durham Newcastle London & Manchester business schools	Aston Birmingham Bradford Hull Leeds Sheffield York Belfast Ulster	Liverpool Manchester Salford UMIST Leicester Nottingham Warwick Keele Loughborough	Essex Kent Reading Solon Surrey Sussex Oxford Cambridge E Anglia				
Functional	Research policy	Engineering and technology programs University industry Jigs, CAD, Tech, New blood NAB-WAB	Capital policy & co-ordination Capital Public expenditure Survey & estimates	University restructuring Closure of departments Redundancy Superannuation Centre policy as regards Scotland	Continuing education Science Student union matters	Education, science & art case Studies related matters Libraries	Inter-university cost comparisons Indicators of performance Sectoral cost comparisons Financial efficiency of universities Research expenditure & charging Devolvement of guidelines on science work	Recurrent grant (future) Exchequer & audit dept & PAC matters PES & salaries Computer board liaison	Financial returns (Form 3) Statistics on: university staff, students, first destinations of graduates, recurrent grant (present), continuing education, Other statistical requirements	Secretariat Cost Centre Establishments Chartered UGC public relations Catering and residence Recurrent grant (present) Grant payments Miscellaneous financial matters	Capital program management Planning Maintenance Management of assets

UNIVERSITY GRANTS COMMITTEE RUNNING COSTS 1985-86

	£
Staff salaries and wages and employer's insurance contributions	1,028,000
Travel and subsistence for members and staff, and members' fees	293,300
Accommodation, fuel, furniture and minor works	396,700
Stationery and other administrative expenses	158,000
Total	£1,876,000

Peter Scott

The weekend at the college didn't turn out like you planned; the things that pass for knowledge I can't understand... (Society Dan, "Reeling in the Years").

Pop music and academics have never been the happiest of bedfellows. Paradoxically, their relationship over the past 20 years has grown more uneasy rather than settling down. It was, after all, relatively easy to identify the musical thrusts of the late 1960s with the emergence of an all-embracing counter-culture, but that looks painfully naive now. Duran Duran and the crisis of identity in the mid-1980s? Try that one on the Economic and Social Research Council.

In a sense, music is only suffering the difficulties shared by all popular arts and their commentators. How do you study meaningfully pieces of work which you may have lived through and enjoyed on a completely different level? The debate over "high" and "low" culture is familiar territory for many academics involved in popular studies, but some have posed more acute problems than the other arts. The slick professionalism of the record industry and the media have ensured that the three-minute pop song remains an ubiquitous, if sometimes facile, commentary on our times.

A recent seminar on popular music, organized by Kent University's inter-disciplinary studies group, illustrated the somewhat chaotic state of the subject at present. The all-day conference deliberately sought a diverse range of contributions, hearing papers from a sociologist, a psychologist, a musicologist and a critical theorist. All tried to examine one particular aspect of the subject, at the inevitable expense of coming to any kind of coherent conclusion - but that alone did not count against it as a legitimate academic subject, as organizer Mr Dave Reason pointed out.

"One view of pop music is that it does have an essence, it is that it is dispersed, but that doesn't mean it can be dismissed as unsuitable for discussion at a university. That is arrogant and short-sighted," he said in his opening speech. Virtually every participant, however, referred to the problems of having their work treated seriously and - dare one say it - respectfully.

Not the least of these problems is the difficulty of finding the correct methodology for the subject. Ms Sheila Whiteley, who lectures at the Midlands Arts Centre and runs an Open University course in popular studies, had an orthodox musical training at the Royal College of Music, but soon discovered the un-

Studying the songs of experience

Peter Aspden attends an all-day seminar on popular music held at Kent University

suitability of studying the chords of a Jimi Hendrix song.

The same might be said for the lyrics, although Ms Whiteley used Hendrix as a forceful example in her paper on the inherent sexism of the "counter-culture". Hendrix, talking to his "cute little heartbreaker and sweet little lovermaker" in "Foxy Lady" epitomized the exuberant and aggressive male attitude towards women, seen as a focus for free love and easy eroticism - but what gave his trite language its true potency was his extraordinary guitar playing and posturing. And then, you work out the chords.

This attitude contrasted with John Lennon's "Lucy in the Sky", which described a wall-like, dreamy figure, who was nevertheless no less the subject of a possession fantasy. Either way, from evil Jagger to dopey Donovan, men ruled the roost. "The counter-culture managed to throw up the unstable Madonna/whore combination," concluded Ms Whiteley. And that presumably explains why, nearly 20 years on, the Western world is apparently obsessed with a squeaky, ill-tempered aspring film star with a penchant for crucifix earrings.

Mr Graham McCann, a lecturer at Cambridge University, called his paper, only semi-philosophically, "Language, Truth and Aesthetics". The paper, delivered at Ramones-like speed and full of the densities of critical theory, was clearly obscure, if not incomprehensible, to many people, assuming fairly intimate knowledge of the works of Barthes, Adorno and other "difficult" authors. His espousal of the ultimate aesthetic of intense expression - black soul music - called for a new way of looking at pop, in which its freedom, fun, power and passion could be harnessed to critical language.

In fact, Mr McCann's paper sparked off one of the most provocative debates of the day, namely on the accessibility of pop criticism. Challenged on the difficulty in following his paper, Mr McCann replied he

was "not talking to the people who buy records, but to the people who were studying them". But there was a brand of academic elitism which, while acceptable in many fields, was problematic when dealing with a popular art form.

Again, motivation for study becomes absolutely crucial - if you become interested in pop during hot summer nights in clubs at the age of 15, how do you objectively analyse those very same pieces of music 15 years later as an academic? And how do you express yourself? To Mr Reason, the problem is not unique to popular music. Analysis of football hooliganism, he points out, does not use the language of the terraces; but the tensions and contradictions re-

main just the same. Even the most niggling criticism of Mr McCann's paper illustrates the problem - he was admonished for referring to "Friedrich" Nietzsche or "Roland" Barthes. Sexism, racism or a subconscious discrimination between "high" and "low" culture?

Two of the more orthodox academic disciplines which embrace pop music reasonably happily, are psychology and sociology, and these represented the most "scientific", least contentious contributions to the conference. Mr Bob Crowther, of Kent University, had conducted experiments on groups of schoolchildren to assess the influence of major- and minority views on musical

preferences, recognising that positively thrived on peer comparisons and pressure.

Ms Ruth Finnegan, of the University, reported on her term study of amateur jazz. Milton Keynes, and how it developed, progressed, or not. Metacritically researched, but it was nevertheless sound and groovy: "It was clear that such as Ma Ma Gura and Brinn chose names which were their musical content". The solid, contemporary, urban anthropology, but it raised it laughs all the same.

Mr Mark Huxtable, a book writer and lecturer, was not wanting to free pop from its sociological significance as a form of youth rebellion, and turn to music itself. He noted the conundrum of condemnation vs. greeted every new wave of music from jazz in the 1930s to punk in the 1970s. Pop was not just a fad, he said - "For every 'The Steps to Heaven', there's a 'My Best Friend's Girl'".

Music had now become an overwhelmingly powerful industry, a cycle and flow of its own single remix to video to film soundtrack translation by a Hungarian pop band, and so on; a constant constituent of our surroundings, needed to be studied as such. Paradoxes abounded - how could pop regard the highly politicized 1980s, relaxing background music? How earth has Barry Manilow become a middle-aged fantasy figure? These were the real questions to address, according to Mr Huxtable, a leading member of the International Association for the Study of Pop Music.

Ultimately, the Kent conference specialized in throwing up more questions than answers, but different angles and interests, and it was clear that people were not talking to each other. Perhaps the most peculiar irony is the on-site sees academic study itself as a form of fashion and pop culture. Thus, the minute *The New York Times* originally devoted to pop music began to drop the names of Pop music and Barthes in its criticisms of Mr Crowther, his works found into this month's accessories, to be casually slipped into the hip pocket of your Levi 501s.

These problems will not easily be solved, but the conference provided more to the link between academics and pop music than the annual Association of University Teachers' disco - although on a ways wonders why the most popular time in that particular event is "can't get no satisfaction". Another sign of the times?



The Jimi Hendrix Experience circa 1967: inherent sexism of the counter-culture

Mark Williamson analyses the risks from novel biological forms introduced into the environment

The term "invaders" brings up images of the Norman Conquest. In the biological world some invasions have had similar drastic effects: the suppression of native species (or earlier invaders), and the dominance of the new. Most recent biological invasions of Britain, though, follow the pattern of other threatened invasions, and in some cases, since the Normans. They fail, or they establish themselves locally, or they find a distinctive niche and so have minimal effect on the species already present.

It is not yet possible to make good guesses about which species will be successful invaders and which will fail. Quite often there is little agreement even after the event about why a species has invaded successfully, as for instance with the Fulmar (a species of petrel that looks like a gull) which has



spread round all British cliffs in less than a century. Another worry is that control of a successful new pest species is often difficult, uncertain and expensive. Rats and house mice are familiar examples. Mice came in the Iron Age, black rats are known from Roman times, and house mice have only been here a couple of centuries.

A third worry is that the novel forms that could result from genetic engineering might produce even more intractable and unexpected problems. There are many examples of plants developed and used as crops which have also become weeds, white mustard for instance. As genetic engineering allows more adventurous development, so it might produce more adventurous invaders.

Invaders of a troubled land

To evaluate the risks of genetic engineering, and so the precautions that should be taken, it is useful to see what has happened with other biological invasions. In Britain where almost all habitats are modified by human activity, we can talk about invasions into the general environment, encompassing semi-natural, agricultural and indeed all outdoor habitats. The concerns about releases of genetically engineered organisms have by chance emerged a programme to study the ecology of biological invasions into natural and semi-natural systems. SCOPE is the Scientific Committee on Problems of the Environment, one of the numerous facets of the International Council of Scientific Unions, and it studies problems by bringing together both the experience of each problem in different countries, and experience of different aspects of the problem as studied by different biologists. This particular SCOPE programme is under the chairmanship of Dr H. M. van der Meulen of the Department of Biological Sciences at Stanford; the British meeting took place in London at the end of February.

So, what is known about biological invasions? Although most are caused by man moving species around accidentally or deliberately, there have always been natural invasions. Almost all British species arrived here of their own accord since the latest retreat of the glaciers, in the last 10,000 years or so, a process continuing to the present.

Partly because of the slow natural spread of many species, Britain has fewer species than might be expected for its area and climate and might well be more prone to invasions by man-borne forms. In fact there have been surprisingly few successful introductions, and even fewer have become problem species. The statistics are a little fuzzy: while, for example, there are over 20,000 native species of British insects, less than 500 have been recorded as introduced into the general environment, and only about half these have become established. Only a dozen or so have become pests.

Plants have been more successful. To set against fewer than 2,000 native species, there have been 300 or so recorded introductions (ignoring those only in gardens) and about half of these have died out. A couple of

replayed in other African lakes. All these are cases where the introduced species is a predator. While many other cases of serious effects by invaders involve predators, one only has to think of rabbits, grey squirrels and innumerable weed pests to see that damaging species can occur at any level in ecological communities. But it seems that predators have a higher probability of becoming dangerous invaders than other species.

Other rules about invaders help explain the patterns seen, but have little predictive power about new invaders. Disturbance is often necessary for a plant invader and, which is sometimes the same thing, invading species often prefer open habitats. Successful invaders often come from similar climates to their own natural environment without their own natural controlling enemies. The ability, either facultative or obligatory, to reproduce from one parent only is often an advantage to the invader.

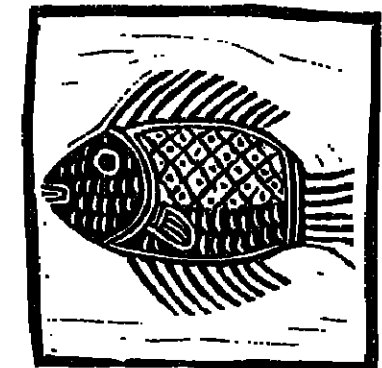
One widely held biological view seems to be incorrect. The intrinsic rate of natural increase, usually written as r , is important in predicting the rate at which an invader will spread, but seems to have little power in predicting which species will invade. Retrospectively, it can often be seen that the invading species has found "an unoccupied niche". As yet we have not found methods to locate these empty niches before they are invaded, and the study of ecological communities by computer simulation suggests that the differences we need to look for can be very subtle. All the rules have exceptions, and the only conclusion is that all communities can be invaded, even though some are much more invulnerable than others.

An example of an unexpected serious invader is the gall wasp *Andricus quercuscalicis* which is causing much destruction of acorns on native oaks in England, up to 90 per cent of the crop. *Andricus* has a complex life history, which involves two species of plants used alternatively, and the other being the introduced Turkey oak. The complex requirements of this wasp, at the edge of its geographical range invading a community apparently rich in competitors and enemies, make the fact that it has become a pest surprising.

Faced with this inability to predict, most countries have strong quarantine measures to keep out agricultural and other pests. Genetic engineering encourages us to relax these, as a potential beneficiary and a potential major threat. Crop plants and farm animals have been subject to primitive genetic manipulation for thousands of years. Genetic engineering gives the prospect that even more startlingly useful improvements on natural products can be found.

The first product to be put forward for release was a bacterium to prevent ice damage to plants in California. The resulting dispute allowed those in favour and those against to clarify what precautions and trials should be undertaken before new organisms are released into the environment. Other improvements that might come from genetic engineering are herbicide resistance, better fixation of nitrogen, more resistance to pathogens, more effective pathways against insect pests and many others. It is easy to understand the fears that these newly introduced forms might escape from where they are supposed to be and cause trouble elsewhere, become a weed or a pest, and become, simply because of the characters engineered into it, extremely difficult to control. The Advisory Committee on Genetic Manipulation is issuing guidelines on planned releases.

Should those who want to release genetically engineered organisms provide at the same time a system to control their product if it should get



out of hand in the same way that an architect has to build in fire precautions of one organism by another, when it works, often both effective and permanent.

But there have been many failures. In the same way that it is difficult to predict which invading species will build up large populations, so too is it difficult to predict which biological control agents will be effective. Even with careful selection and screening, a success rate of one in three is quite good.

The benefits that might be got from genetic engineering are so large that they must clearly be pursued with vigour. The lesson from anti-theoretical species is that as much effort needs to be put into ensuring that they do not become pests as to ensuring that they do become of economic benefit.

The author is professor of biology in the University of York.

John O'Leary reports on the untypical optimism of the Essex Institute of Higher Education

It seems that you are going to have to run fast just to survive in the uncertain world of the colleges and institutes of higher education over the next few years. The first hurdle comes up on April 4, when the National Advisory Body reveals its officers' detailed proposals for student numbers in 1987/88, and Government plans suggest that these will be just the start of a now and lengthy period of attrition.

However, if there is a mood of pessimism and resignation in the colleges, it is not to be found at the Essex Institute of Higher Education. Indeed, in the recent past, events have been moving so swiftly that there has hardly been time for self-doubt to set in. A new director, a new name, a new campus and new moves to bring the bulk of teaching on to a single site have all arrived in the last three years. There is little doubt that the institute has been running faster than most.

While others seek to minimize the scale of the cuts expected to be imposed by the NAB, Essex has gone on the offensive, putting in an audacious bid for expansion. It would not be content with even the 5 per cent increase in student numbers allowed by the NAB - the institute's submission noted that an expansion of the order of 20 per cent would be more appropriate to respond to an external demand. Nor does it pander to the NAB's preferences for part-time and sub-degree work, making out a case instead for developments in the opposite direction.

It is not that the institute is being deliberately contrary, or even that it is adopting a clever negotiating position. The reasoning behind its submission is simply that Essex has already embarked on a clear and logical development plan designed to fit in with the needs of a booming area. Its academic profile has altered significantly in the last few years and the claim to be an entirely vocational college is backed up by an unemployment rate among last year's graduates which is below 5 per cent.

Running ahead of the times

Although Essex has courses in all but one of the 14 national academic programme areas used by the NAB, it has been phasing out provision in the arts and humanities and is transferring all non-advanced courses to Chelmsford College of Further Education. The county council, which has lent enthusiastic support to the institute's bid for polytechnic status, decided to concentrate its higher education provision on the institute so, given the considerable constraints on space, it was thought sensible to move out the non-advanced work. By the time this process is completed, 97 per cent of all provision will be advanced and two-thirds of the full-time students will be on degree courses.

Relations with the county council, which have had their ups and downs in the past, are now said to be extremely good. And local industry, including not so local companies like Ford, is involved in the institute's affairs to an extent seldom seen in Britain. Industrialists are involved in course planning and even staff selection, and there is a flourishing exchange of staff into and out of a wide range of firms.

One result is an impressive and increasing volume of full-cost consultancy and teaching work with industry, which brought in £350,000 last year and seems set to become more profitable still. The institute beat off competition from universities and polytechnics to win a big contract with Ford and has high hopes of attracting another valuable training package from the company. It is also launching an engineering degree, validated by the Council for National Academic Awards, specifically for Cable and Wireles.

More permanent links with local professions are in evidence in the shape of the East Anglian Building Study Centre, funded by the construction industry to offer continuing education and training; the Essex Business Advisory Centre, a joint institute/county council venture catering for small and medium-sized firms; and the Chartered Institute of Public Finance and Accountancy study centre, which provides professional training for the Treasury, local authorities and the Audit Commission.

To cap these, the institute now has the spacious and elegant Danbury Park management centre, which until last September came under the control of North East London Polytechnic as the NELP pulled out and the estate, together with the former palace of the Bishop of Rochester, reverted to county council control, there were competing claims for the tenancy and fears of a sale. It was decided to accept the proposal for a new-style management centre, concentrating on full-cost short courses, as seen as a considerable vote of confidence in the institute and its director, Mr Mike Salmon.

Much of the credit for the buoyant mood of the institute is given to Mr Salmon, who stepped up from the post of deputy director in 1983 and arrived at what was then the Chelmer Institute from NELP. He has been the driving force behind the redrawing of the college's academic profile and the consequent high turnover in staff, and now functions largely as the public face of the institute, in constant touch with industry, local and national politics. Most of the day-to-day

administration is left to his assistant, Dr Stephen Bennett, the head of marketing.

The arrangements have been undeniably successful. Industrial links have brought a wealth of equipment to Essex as well as much-needed funding, and there is equal awareness of the value of political friends in the right places. It is a coincidence that the institute received £180,000 in 1984/85 from the EEC social fund while having access to a full-time lobbyist in Brussels, enjoying a close relationship with the Essex MP, Mr David Currie. Neither is Westminster forgotten: all the local MPs were invited to a recent weekend seminar to teach them in public computing skills - a shrewd exercise in public relations which could only foster goodwill.

Now Mr Salmon and his staff must wait to see whether their ambitious plans can go ahead. The case for polytechnic status has been put, but not only on the academic record but also on the location of the institute at the heart of the growing county in England. There is a polytechnic in Essex, Suffolk, Cambridge, Norfolk despite the region's reputation as one of the centres of the new technologies. The institute's 2,900 student population is increasing and the NAB's original guidelines for a threshold level have been crossed.

The NAB plan itself remains the other dominant question mark over the institute's future. Essex has reluctantly offered up its thriving vocational languages programme as the sacrificial lamb in its own submission but is strongly opposed to other cuts. National planners pointing out the institute has its development concentrated at Brentwood, will be vacated as soon as possible bringing teacher training on to an expanded central campus, which will also contain student residences as soon as an adjacent site can be found and approval given for building to begin.

Exchanging ivory tower for biscuit-tin factory

In the 1982-83 edition of its annual report, the Polytechnic Finance Officers' Group published, for the first time ever, a section devoted to the income created by their institutions. "Although the income is small in comparison to the gross expenditure," they said, somewhat apologetically, "some polytechnics have started to earn quite considerable sums in their sales, lettings and consultancy activities."

From these modest beginnings, the business has been doing very well. Short course tuition fees, which were deemed worthy of a separate heading in 1982-83, increased to nearly £32 million the next year. By 1984-85, the licensing of income had become more complicated, taking up two full pages of the report: the total income from short courses (excluding the inner London polytechnics, which keep a different financial year) was nearly £24½ million.

Up, too, was externally funded research from 1983-84 and by approximately the same increase last year. The figures are incomplete. Not only the inner London figures make a massive contribution to the total, but some polytechnics appear to send no returns and many do not separate research council grants from those of public corporations or private companies.

But the overall pattern is clear enough: the polytechnics are striving to achieve Sir Keith's aim of 15 per cent earned income. In addition to conventional part-time courses, every department is producing tailor-made courses which it is marketing with increasing energy and aggression. Some polytechnics have set up halfway agencies designed to promote their courses and attract customers from industry and commerce. The South Bank Technopark, opened in December and financed by Prudential Assurance, will enable new firms to use the Polytechnic of the South Bank's facilities.

Not are the figures of higher education lagging behind, and many of them are making well over 15 per cent of their income with a variety of

John Daniel on the dangers of over-privatizing polytechnics

schemes ranging from cohorts of foreign students to Manpower Services contracts and SAGA holidays. The rationale for this entrepreneurial activity comes under two related headings: the need to earn extra money to offset the cuts, and the desirability of forging closer, more "relevant" links with industry and commerce. And what is more relevant than money? The "economic" course justifies itself ideologically and financially, since they are one and the same. There can be little argument against such enterprise, and at management level there is none. The annual reports from the polytechnic directors boast increasingly of their profits with all the pride of a chairman's statement to the shareholders after a good year.

There is a fine line between making extra money to keep education going and turning education into a business, and the cuts have provided the cover for sliding from one position to another. Instead of a vigorous debate about the relationship between higher education and society, there is an intellectual vacuum filled by the "economic" course. We appear to have exchanged the ivory tower for the biscuit-tin factory without knowing exactly what we were doing.

The slippage occurs because specifically for business the designing of courses specifically for business or industry with a financial reward for individual lecturers. The motivation changes when a lecturer realizes he or she can make, say, £1,000 for a four-day course for industry which is costed at standard consultancy rates.

Undergraduate courses are bound to suffer if such a process continues, and the lecturer who concentrates on what might be termed in-house courses will inevitably be seen as contributing less to the wellbeing of the institution. To teach only students in this new context, showing a distinct lack of academic enterprise.

It is, perhaps, easy to exaggerate the results of what is presented as commonsense: to make money and be of use. But the alarm-bells were sounded last year with the publication of a booklet entitled: *Whose Business? An analysis of the failure of British business schools and a radical proposal for their privatization* by Brian Griffiths and Hugh Murray, deans of City University business school. The authors proposed the privatization of "vocational" postgraduate education (particularly engineering) "so as to improve the quality and diversity of training and save the taxpayer even larger sums of money."

The authors found British business schools were too academic and they quoted a survey undertaken in 1984 by the British Institute of Management which castigated the MBA graduates (Masters of Business Administration) as "too theoretical, too mobile, far too highly priced and too disruptive to other managers."

The remedy was obvious: courses should be more practical: subjects such as psychology and sociology should not be taught as disciplines but should engage with real-life problems in a business context. Salaries and terms and conditions of employment in the privatized business schools would be determined by the market, and the schools would be managed by boards of directors or partners. The "elastic cartel" of the academic "firm" in which prices and wages are determined by government, production quotas are fixed and "whose employees are typically granted security of tenure for life" would be swept aside by privatization.

The authors seemed unaware that the public sector of higher education contained many business schools at all. For them the business school was, by definition, postgraduate and university-based. Yet their ideas are more likely to be influential in the public sector, since this is where the bulk of business education has now moved. There are 28 applications for every polytechnic business school place, according to recent PCAS figures, and under the comprehensive title of business, social

and management studies, it tops the student numbers lists in every polytechnic.

By another slippage, the privatization advocated for the postgraduate schools could well be applied to the public sector since many of the same criteria can be used. The BTEC "Policies and Priorities into the 1990s" has, after all, been saying very much the same thing. The emphasis on "relevance" can then dictate an anti-theoretical approach which results in a series of chopped-up "packages" that cannot be articulated because the student lacks the ability to handle concepts.

What made sense at the postgraduate level does not make sense for undergraduates, and the final result is the opposite to that intended: a lack of flexibility on the part of the student or worker.

Perhaps the tide is beginning to turn, for the latest BTEC guidelines have also called for more "knowledge" as an ingredient of recommitments. But the Government cuts are still with us, pushing institutions towards privatization, which is perhaps their real aim. "Relevance" without full entry into the marketplace may be ideologically impossible for this government and demonstrations of the former by Maurice Shook, chairman of the Committee of Vice Chancellors and Principals, when he points out that 34 per cent of UK graduates are in science and engineering compared with 22 per cent in Japan or 16 per cent in the US and Germany, cut no ice.

Yet if those teaching inside educational institutions in the public sector cannot defend educational values as distinct from those of the market it is difficult to see who will. Lecturers of engineering or business are first and foremost still lecturers. Who will need a polytechnic business school if Marks and Spencer is running an efficient three-year training course?

There are more ways than one of colluding with those who would like to dismantle the state system of education. The enemies of higher education are not all in Whitehall.

The author is head of humanities at Plymouth Polytechnic.

Pauline Stafford

Scratching out some security in the winter of discontent

As the blanket of snow deepened and hardened over our garden the birds, which my children feed irregularly, began to appear daily in search of rations. Our supply of crusts and seed was soon exhausted and I was driven to resort to our local pet shop for another five pounds of wild bird food. The assistant weighed me out what proved to be her last bag. Demand, she informed me, had been high: their profits in winter lay in peanuts (at least I think that was her meaning - and not that her profits were peanuts - but I must admit that I was temporarily mesmerized by the gyrations of the packs of bloodworms on the counter). The soft-hearted individuals around me obviously buy bird seed by the ton, the birds of their gardens staying plump and sleek through the harsh winter months.

Feather-budded, you might say, unnaturally protected from the bleak conditions faced by their relatives of the wild woods, given a security of tenure on their garden homes and food supply which distorts their relationship to the real world. There they sit each morning on the branches of my horse chestnut (as doubtless elsewhere), awaiting the appropriate mix of sunflower seed, bread crumbs and peanuts when they should be foraging for their supply of nuts and berries on the forest floor. Am I and others like me distorting the evolutionary process? Encouraging the survival, nay the dominance of a species of idle scroungers whose defective genes will dilute the pool of avian enterprise?

Perhaps in the future their unhappy descendants will show the stunted wings (and blunted beaks) of a species adapted only to the short flight from branch to pavement and back again. Perhaps I ought to withdraw their rations before long-term disaster overtakes them, expose them once more to the invigorating self-sufficiency of bleak mid-winter. Perhaps I should, but I would never survive my children's accusations of hard-heartedness, their abusive taunts and whispers of "Maggie" whenever my back was turned. I shall continue to feed them, but the lingering doubt that I have created for my feathered friends an environment which will produce the Dr. Pterodactyl of the bird world.

Have I cautioned them into a situation of low productivity and insouciance by the equivalent of a guaranteed post with a guaranteed salary? Flabby pinkies that are incapable of giving them that essential incentive? Should I starve them of research seed so that they will find their own, show them that their situation was temporary and galvanize them to the work hunt? In the process their busy beaks will aerate my lawn and produce a lush springtime sward we all can enjoy.

Drips and drabs of grace and patronage

Incidentally saving me much labour and investment with fork and fertilizer. Do I need to encourage backbones in them as it has been encouraged in an acquaintance of mine by temporary employ?

The person is a parent of a friend of my daughter's (such revelations of investigative journalism must be deliberately vague, and in this case anything more specific might damage his/her prospects). She/he has held a temporary post for more than three years, an initial term extended by dribs and drabs of grace and patronage. The insecurity has certainly created the necessary attitudes of the client. Not for this academic the freedoms of a Placemaster. Long days of constant attendance, always first in and last home, always willing to pick up the

undesirable jobs of departmental administration, cheerfully carrying a heavy teaching load and combining it with productive research. Beyond the walls of the institution the insecurity has had less obvious benefits. The situation of transience has extended to accommodation. The financial rewards (sic) of temporary employment are inadequate for house purchase; in any case the certainty of a coming move scarcely encourages the dead expenditure on solicitor's fees, building society charges and so on. On occasion the family has been

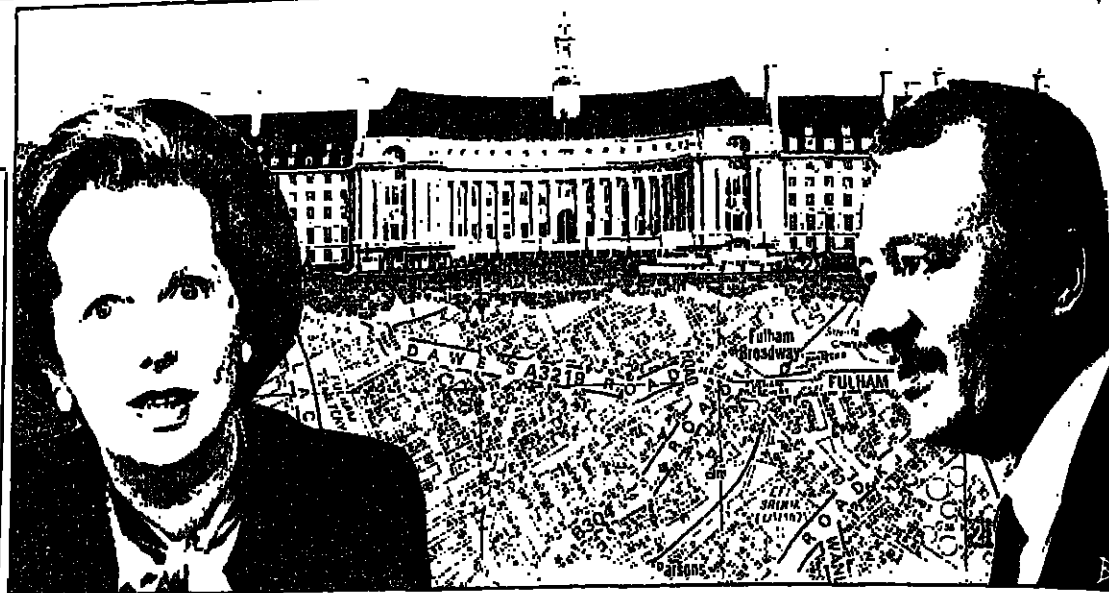
The insecurity that breeds strength must be extended

within days of homelessness, especially since rented accommodation is difficult to come by. But these are individual results and in the great evolution progress of higher education to be discounted against the improvements in the whole. The department has had the academic equivalent of a good forking over and an application of Laminol - at minimal cost. The species "academic" has been invigorated by the encouragement of an enterprising starting. The garden will be lovely, its bird life eventually the freer and stronger for this experience.

A pleasant scenario, though even it must include an "eventual" with some potential evolutionary side-effects on the way. But my temporary and highly productive friend will, by his/her very situation make no permanent contribution to the academic gene pool. And her/his stay in the department may have proved to give very little air to its roots. The permanent members may already have evolved in the direction of unproductive idleness under the optics of regular feeding. The example of their fervid colleague may have produced a new stimulus and guilt, or equally a thankful realization that the seed-supply is written into their contracts. The answer, then, is obvious. The contracts must be changed, that insecurity which breeds strength must be extended.

Security out, I must stop regularly feeding all my birds. In the imperfect reality of suburban life this will make me personally a loser. Others will continue the supply; their munificence will still distort evolutionary change and I shall be deprived of the enjoyment of seeing not just sparrows, chaffinches and blackbirds in my garden, but the redwings, greenfinches and coals which are attracted by my regular and generous provision. My most attractive and rarest birds will simply decamp, and the beneficiaries will be neighbouring gardens which have maintained their generosity. Any embryo long-tailed tit or bullfinches I might have will never get past the egg stage. But if I cannot enforce my principled stand on my neighbours, I can at least instil some backbone into my indigenous inhabitants, those dull and unproductive blackbirds and sparrows of the garden department.

Will I spare a thought for them from behind the double-glazing, as they continue to dig for worms and aerate the lawn, as they have quietly been doing all along in spite of (because of?) the regular feeding? Their numbers will adjust back to the "natural" balance with the supply of bugs and berries, undisturbed by the intervention of my intelligence or compassion. I shall not, at least, be embarrassed by their emaciated corpses on the doorstep, they obligingly drag themselves off to die... Oh dear, I shall be back buying peanuts and chickenfeed again. Can there really be no rational consequence looking out on snow-bound high-arched education from the centrally heated comfort of Whitehall?



A lot of local difficulty

Patricia Roberts considers the problems of policy clashes between councils and central governments

Policy change often takes place when a political party comes into power at either central or local government level. However, because the elections for different levels take place at different times, often newly elected councils may be frustrated in introducing new policies. The policies may conflict with central government ideas and a new council may have to wait for its party to gain control at central level before far-reaching changes can be implemented. Some policy change can take place where there is a degree of consensus that allows it to be implemented. But where a new policy requires finance or a change in legislation then local initiatives may be thwarted.

Taking the London Borough of Wandsworth as an example, neither the local authorities nor central government have remained in the control of one political party throughout the period 1961-85, nor has the same party necessarily been in control of all levels at the same time. During this period, political control changed hands four times at central government level (in 1964, 1970, 1974 and 1979), four times at Greater London Council level (in 1967, 1973, 1977 and 1981) and three times at local level (in 1968, 1974 and 1978). When Labour held central government, the Conservatives won the GLC elections in 1967 and 1977 and the borough elections in 1968 and 1978. While the Conservatives had control of central government, Labour won the GLC in 1973 and 1981 and the borough elections in 1971.

In Wandsworth, during the two periods of Conservative control at local level, home ownership (including the sale of council homes) has been pursued vigorously together with improvement of the quality of private homes. A larger role for housing associations both in area action and elsewhere was seen and supported. The Conservatives accepted and welcomed rehabilitation earlier than Labour and supported area improvement policies. The desire to sell council housing meant that houses with gardens were not readily available for families wanting to move out of high-rise blocks. When in power Labour supported council housing and tried to provide homes for those in housing need. Later they showed a concern for families in high-rise blocks and instituted an allocation policy to get these families rehoused nearer the ground. They saw a more limited role for housing associations and kept them out of area improvement schemes. These schemes were few as they were seen as benefiting the better off and leading to gentrification at the expense of existing residents.

The Labour and Conservative councils had in common policies for loans for house purchase, improvement grants for renovation and modernization to owner-occupiers and landlords, letting at fair rents; and declaration of area improvement schemes although differing over the roles of the public and private sectors. The extent of either party's concern with the appearance of the environment was limited. Environmental measures to high-rise flat estates were severely restricted by public expenditure cuts. The only policy agreed at all levels of government, regardless of which party was in power, seems to have been the provision by local authorities of home loans. Rehabilitation was eventually accepted at all levels and by both parties, but possibly for different reasons. To the Conservatives it was a

way of cutting public expenditure and giving more leeway to the private sector and to housing associations. To a Labour government it was a way of cutting public expenditure at central level. To Labour at the local level it became necessary because of central government refusals on compulsory purchase orders, housing levels that made new building difficult, and other restrictions. The consensus on the rehabilitation front can be seen in the Housing Act 1974, much of which had been drafted under a Conservative government and was enacted under a Labour government.

The Conservatives were returned at the local level in 1978 having campaigned on a basis of holding the rates down and on the sale of council houses - aims also of the Conservative GLC returned in 1977. The new council had a range of policy measures ready to put into effect within the first few months or even weeks. The policy measures made use of existing powers such as shifting housing funds from redevelopment to home loans and disbursement to sell council homes. The return of a Conservative central government in 1979 aided policies such as council house sales and the local council went along with cuts in local expenditure as it conformed with its own desire to keep rates down. During the period 1979 to at least May 1986 both central government and borough have been firmly controlled by the Conservatives. The drive for privatization has been strong with the widespread sale of council housing and privatization of services such as refuse collection.

A recent survey of the borough's housing stock emphasizes the major concern for the physical condition of the stock and the proposals for task force areas stress the need and advantages of private money. However, even a Conservative Wandsworth fails to get as much housing finance from central government as it thinks necessary.

The different levels of government when all controlled by the Conservatives seem to have been in fair agreement. When the levels of government were controlled by Labour there appears to have been more disagreement between central government and the local level. This was caused mainly by the need seen by central government to cut public expenditure for economic policy reasons while at the local level the Labour Party wanted to pursue housing policies that required higher public expenditure.

In general it seems that when a Labour administration comes in at the local level it is likely to find it more difficult to implement new policies than when a Conservative government comes in under a Labour government. A Conservative council can often find discretionary powers to implement policies associated with private finance, private ownership and the physical housing stock while a Labour council may need more public finance and new powers to implement policies.

A Labour council in its attempts to increase the new-built programme is

likely to face more constraints than a Conservative council trying to increase council house sales. The constraint will not all disappear either with a Labour government - limits to housing finance are still likely to operate as environmental constraints such as a shortage of housing land. Conservative councils in addition often seem to come into power with the implementation of policies better prepared and we thus less reliant on officers to implement new policies.

The compatibility of policies is greater in 1981 than in 1986. Ideological and economic policy have widened the gap. At the national level this is not seen as advantageous in reports such as that chaired by the Duke of Edinburgh or that by the Church of England. For most of the period the Labour Party leaned towards council housing and the Conservatives towards the private sector, but Labour supported the growth of owner-occupation and the Conservatives supported the building of council homes for at least part of the period.

The breaking down of the consensus came with the Housing Act 1980 and the Local Government, Planning and Land Act 1980. As well as giving council tenants the right to buy their homes, these acts radically changed the housing subsidy system. The public expenditure cuts and monetary policies drastically reduced the level of both council and private house building.

How far in the end did local authorities reflect central ideology? Two main areas of difference arose. First, the finance, where the local level nearly always wanted to spend more. Governments do have a considerable influence over action by local authorities like Wandsworth, who may want to improve housing and social conditions and the level and control of public spending is absolutely crucial to influencing the extent and type of action taken. Second over different parties being in power at local and central levels. The differences in ideology were more between parties than between central and local levels as seen in Wandsworth built high-rise when the money was available; it rehabilitation when money was switched to that; it could provide little extra environmental provision when the housing cost yardstick and housing improvement allowed only a limited improvement to the environment.

Since 1979 more compatibility has existed between central and local levels with the privatization of public services and the enthusiasm for private enterprise. With no GLC election in 1985 the Labour Party and the Conservative Party at the end of the month in 1986 the Borough elections could be in a Labour council - or a Conservative council - and the privatization and the gentrification have made inner areas such as Wandsworth safe Tory boroughs, or at least having a strong enough hold to start having an influence?

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Olinga Ta'eed compares the methodology of university postgraduates with that of their counterparts in industry

Prince Charles's "fourth-class nation" speech provoked vexed expressions from those industrialists he accused of being less imaginative, less innovative, less creative, and less enterprising than their American counterparts. He presented a tripartite diagnosis: British marketable products and ideas are falling (indicated by the poor UK performance in international patent registrations), those that we do have are being exploited abroad, and the rest are being suffocated by industrial inertia.

While the Government and the private sector have concentrated on rectifying the two latter maladies, very little attention and resources are being directed towards tackling the more central issues of the quality and appropriateness of research.

The most popular model is that falling sales imply decreasing research budgets, resulting in declining standards of research, which expresses itself in reduced demand - an asymptotically spiralling but stable path. The reality is far more complex, with at least four other factors involved. Financial constraints cannot account for everything, creativity is also highly dependent on the training of the researcher.

Mistaken and ingrained concepts of research methodology can have repercussions on the actual rate of ideation. Research findings often present inherent difficulties in translation to marketable products. Foreign competitors seem to judge more accurately the delicate balance required to optimize performance and economics. What is technologically best (as British products may well be), is not always commercially best. Even potentially successful products may be terminated as a consequence of seemingly unrelated external factors; foresight and flexibility of design are invaluable for these situations. Entrepreneurs, for instance, marketing multi-fuel (gas, oil, coal) combustion equipment found the miners' strike a bonus.

It is also common knowledge that behavioural psychology has demonstrated a definite link between performance, motivation and reinforcement. That being the case, the quality of any research cannot be taken in isolation. The notion of creative and appropriate research, of course, raises more fundamental questions underlying the whole fabric of our culture. The effort to seek corrective adjustments for an aged, more evolved, more valid and improved scientific research system is a reform in the entire rubric of the education system.

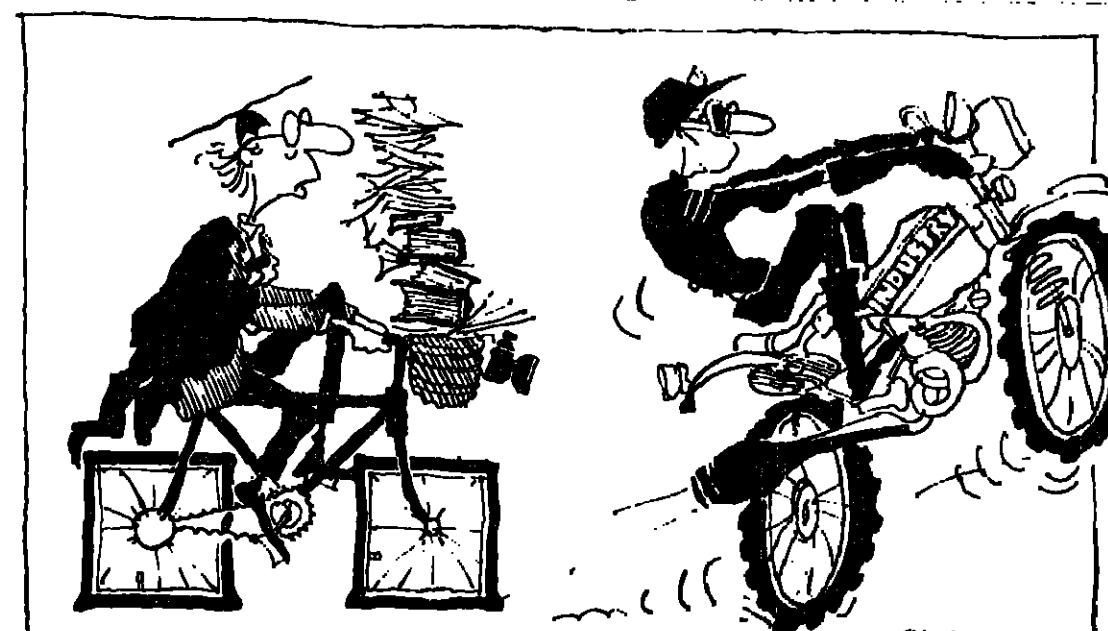
Companies cannot view a graduate researcher as raw material ready to be retrained in tackling "real live" issues. Sixteen to 20 years of schooling have conditioned the patterns of thought of our engineers and scientists. Tests

Financial and other rewards for the industrial researcher are considerable

reveal that creativity has already plummeted 30 per cent between the ages of five and seven, and that a 40-year-old is only 2 per cent as creative as when he was five.

If we accept that we are unlikely to witness macro-structural changes in our education system, then we must look towards some more immediate solutions to enhance and sharpen our industrial research capabilities. Many of those chiefly responsible for progress at the cutting edge of industry, the standard bearers of British research, were formerly PhD students home-grown in our universities for that very purpose. One obvious step would be to modify the training of our PhDs to be more vocationally relevant.

Within industry, engineering progress and research consists of a string of integrated processes - market research, engineering science, feasibility studies, prototype development, production and finally sales. Thus the industrial researcher will identify himself as only part of a collaborative team. He follows his objectives (as set by market research), the purpose of his research and the importance of it in relation to customers and the company. His self-esteem and sense of fulfilment will grow as he applies his academic research to the real world and society. Furthermore, he has a good chance of seeing his ideas achieve fruition and will therefore relate directly to his work. In both financial and



Research and the real world

non-monetary terms, his rewards are considerable.

In sharp contrast, the typical PhD student appears to be isolated, his research being conducted in complete isolation from related disciplines. He is rarely encouraged to examine the wider issues for fear of attaining insufficient depth in his research. Unlike his industrial colleagues, he is rarely aware of the policy context and the environment in which the research is carried out. During the miners' strike there were probably a large number of disillusioned, coal-combustion PhD students wondering how powerless they were to control an unaccounted independent parameter, called Arthur Scargill, whose effect was to make sure that their theses might never see the light of day. The student assumes that his work will never be implemented (unless involving industrial collaboration), and that the primary purpose of the PhD is just that, to get a PhD; progress is a secondary matter. The absence of a carrot other than a superficial title is hardly an incentive for good research.

Much attention is being focused on both the fall in original academic work (represented by a 10 per cent drop in the paper publication rate since 1973), and the statistics which represent one of the traditional measures of research performance - PhD completion rates. Submission rates became a bone of contention after criticism in the Swinerton-Dyer report on postgraduate education (1982). The report highlighted the main reasons for a loss of motivation and interest, topic choice, supervision, ability, and the attraction of an outside career.

The SERC responded in 1983 with a useful booklet on *Good Supervisory Practice*, but it fails properly to address the relevant issues: "First and more important, is the ability to select problems, to stimulate and enthuse students, and to provide a steady stream of scientific ideas and guidance... there is no way of giving guidance on the first matter." Instead, it gives instructions on the more minor matter of the desired mechanism for expedience in PhDs.

Like their industrial counterparts, academic researchers must focus on three basic criteria. One must ensure, first, that the appropriate problems are selected; second, that the researcher is end-motivated; and third, that the research is subsequently structured. Surely, the key to this issue is not another set of impersonal "techniques", but rather a new "methodology", necessarily heuristic by nature, and laying the emphasis on the individual.

Scientific research is not merely a rigid adherence to deductive reasoning by analysing premisses. It is an active interest which stretches beyond gratifying achievements, and energizes in economic and social change. The new interpretation must give full recognition and awareness of an important high level property of the human mind - creativity, which involves a direct break from the long established patterns of logical and behavioural thinking that both industrial and academic researchers have habitually taken for granted. A three to four-year degree in engineering, for instance, contains nothing at all about the

methodology of effective problem solving. For a methodology to qualify and function fully it must also allow for the researcher's "world view" and appreciate system. While some require their research to be not only cerebral activity, vaguely relevant to their environment, others may require more utopian goals and seek meaningful results as a service to society.

The issues of selection, motivation and structure cannot be considered in isolation from each other, but rather in the light of their intricate interrelationships - purpose, creativity, and approach. The accepted definition of creativity shifts emphasis from special-ized education to a more general one. Creativity can thus be instilled in our industrial researchers and PhD students by exposing them to different disciplines.

Within this cognitive realm, the researcher has at his/her disposal the intellectual tools needed for novelty, by becoming familiar with recent de-

There is no merit in producing minds infected by eager generality

veloping modes of thinking and procedures of inquiry remote from his subject. Given the intellectual breadth, one has to appeal to a form of eclectic epistemology to provide pragmatic solutions. An alternative line of thought expresses itself in the classical paradigms of scholarship which project a very single-disciplined, piecemeal approach to problem solving.

Such an approach encourages a belief in reductionism; a concept pervasive in all scientific systems in fear of losing their unique absolute status as the one measure of all things. There is no merit in producing minds infected by eager generality, but rather those capable of imaginative, lucid, and successful scientific reasoning.

The Finniston report found much evidence of the misguided but prevalent belief that particular disciplines have ontological priority over others (a belief which also underlies much of the act versus science debate). The inquiry "received a substantial volume of evidence both from educationalists and employers concerning the general lack of poor communicative skill... of many engineers and engineering students, and their narrowness of outlook".

Effectiveness for an engineer demands a high level of skill in communication, plus a basic understanding of social affairs and the exercise of judgement and discrimination in non-technical matters. Technological progress, economic growth and social change are so closely webbed together that problems must be approached holistically. Researchers must comprehend at least the rudiments of organizational systems and associated management decisions. If they wish to see their work successfully travel the perilous journey through development, implementation and operation. It may be, of course, that many researchers do share these views but without sufficient in-

tensity. It is not a question of viewpoint, but one of priority. To foster creativity, one must emphasize long-range goals rather than short-range results. Conflicts for limited time, money, and resources, compels concentration on short-range goals. "Ours is the NOW generation."

Industry can rarely afford to be intransigent when faced with a bleak economic future and, characteristically, the more prosperous companies have been swift to explore new methodologies. Perhaps the most controversial propositions are those expounded by "creativity consultants", who claim that creativity can be taught. Twenty thousand enrolments a year prove their case, and at a cost of \$60,000 per course, it is not the fringe lunatics who get baited but a veritable Who's Who of leading multinationals: IBM, NASA, AT & T, Procter & Gamble, Exxon, Shell Oil, Arco Petroleum, General Electric, Polaroid, Apple, etc.

An increasing number also invest in intensified personalized training for their (research) managers, encouraging less stifling supervision rather than more structured guidance. Matchett Training (UK) and the Centre for Creative Leadership (USA) are leading exponents of this. To digress slightly, a recent article in the *British Psychological Bulletin* (November 1985) even correlates research creativity with certain personality traits. Effective researchers, it seems, are those who are ambitious, enduring, seeking definiteness, dominant, show leadership and intelligence, while poor researchers are meek, supportive, aesthetically sensitive, sociable, objective, and extroverted!

Probably the most popular methodology, employed by all major companies, and one applied suited to academic research, is the systemic approach. The role of the systems engineer is to co-ordinate resources and perspectives from a variety of company departments, within a conceptual framework. In addition, wider and more pervasive influences from senior systems are accounted for, and a solution obtained by optimizing (incompatible) objectives. All these methodologies are inherently multidisciplinary and lay greater emphasis on the individual. Several professional engineering institutions are encouraging broader "Special Interest Groups" (SIG) so that remote topics may be studied in relation to engineering. A case in point may be found in the Institute of Energy's curiously named SIG on "Nonlinear Studies", which instigated Babcock Power to examine industrial furnace slagging problems with some novel and abstract modelling.

The Government, for its part, has not been slow to enact measures to enhance research capability with its "Design for Profit" and "1986 Industry Year" themes. Sir Keith Joseph recently gave an interview on the Green Paper (*Edinburgh University Bulletin*, September 1985) in which he advocated the broadening of education with a wider range of subjects taken to a later stage, and some cross-fertilization between the arts and sciences. Earlier in the winter of 1984, he wrote a foreword to launch a new and promising quarterly magazine called

Engineering Tomorrow, from the Engineering Reform Group. The first issue frankly expresses criticism of the present education system and industry. Sadly, financial backing in the form of advertisements was withdrawn before the second issue, making the first probably the last.

Within the education system some exemplary moves have been initiated by the Associated Examining Board in the restructuring of its engineering science A level, and also from the Society of Education Officers in a new curriculum plan - "Education for Enterprise".

The response of tertiary institutions is less encouraging. The recent "knife at the throat" technique devised to provide incentives to improve PhD submission rates at blacklisted universities appears to show little understanding and insight of the complexities of the issues involved, though the goal is universally desired. It is usually the younger universities who provide the pockets of activity that disrupt the stagnant pools of academic routine. Lancaster has both the department of independent studies and the prestigious department of systems with its MA programme, during five months of which the student is directly involved in the study of a real client's problem.

Some suggest that the more successful United States entrepreneurial capability is partly due to their less "scholarly" but broader education system. Other establishments have concentrated on broadening undergraduate courses so that scientific methods are not studied in isolation from practicalities of work. The mechanical engineering department at Leeds has an industrial psychology final year option; and since 1983, engineering at Cambridge has integrated economics, finance, and such like into its courses, much aided by a multidisciplinary management studies group resident within the department.

It would be all too easy to dismiss the poor academic response as a case of ethereal and myopic researchers. The exercise in revision is difficult and intertwined with bureaucratic procedures that set academics and industrialists apart. There is considerable organizational inertia, which is a greater obstacle to change in a decentralized infrastructure like a university department than in autonomous centralized multinationals. Money and prestige is vested in academic departments, which in general show an unwillingness to stake precious resources in new and untested areas.

The academic environment is built to withstand dynamic change

leading beyond their exclusively disciplinary boundaries. The problem of resource allocation, however, may not be as effective a barrier as intellectual inertia - indifference, fear, and psychosociological factors. And who is qualified to teach and supervise in a multidisciplinary field when so few have the required expertise?

The academic environment has been built to withstand dynamic change. Innovation is discouraged in favour of continuity of purpose. During these times when image-building of our colleges is becoming increasingly vital, should universities not be seen to be as concerned with research performance as they are about grant allocations? Respected figures, such as Lady Warnock, have voiced an opinion that academics should not mimic British business, which after all is already in a "parious state". My observations indicate that in this particular aspect, academics would be ill-advised not to do so.

It is reasonable to suggest that some of our more affluent research councils could easily afford to experiment into different methodologies by sponsoring a handful of such studentships (a dozen say). Only if the results are encouraging would further funding be advised. It would be erroneous to end with prognostic and alarmist clichés, but this much can be stated: without the contribution of the education system in developing the attitudes and skills which make up Britain's technological research capability, the economic recovery of our industries will be increasingly contingent on our innovative serendipity.

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BOOKS

Peeling back the layers

Queneau's Fiction: an introductory study
by Christopher Shorley
Cambridge University Press, £25.00
ISBN 0 521 30397 4

Raymond Queneau is little read in the UK, and known almost solely for the novel *Zazie dans le métro* which – on the basis of sentences like its opening “*Doukipudontkan*” – is popularly regarded as a kind of comic phrasebook for advanced students of French.

Among academics the apparent lack of seriousness behind Queneau's rather disparate output (novels of various kinds, poetry, pataphysics, critical commentary and pseudo-science) has placed him in a somewhat marginal position on university maps of the 20th-century fictional tradition. The chief guardians of his reputation have therefore been what Shorley calls “a small band of enthusiastic initiates” whose very enthusiasm may paradoxically have served to keep Queneau labelled as an eccentric. However, his death in 1976 ought to have prompted him to a wider audience, and nine years on Christopher Shorley's meticulous and comprehensive study sets out to do just that.

In Shorley's view Queneau has suffered from excessive partiality on the part of his admirers and critics, even in France and the rest of Europe where his following is larger and more substantial than it is here. In their enthusiasm for the work these Queneau aficionados have each tended to adopt their own particular critical approach and focused on just one aspect of the writing, be it the *néo-fantaisie* exemplified by *Zazie*'s opening sentence, or the depiction of social life among small shopkeepers in suburban Paris.

Borrowing a metaphor from Queneau himself, Shorley argues that Queneau's work is like an onion in that it has several layers all equally deserving of consideration. In consequence Shorley's account covers the entire span of critical approaches, concentrating in turn on Queneau's linguistic innovation, the formal structure of his novels, his fictional world and its three have all received a fair amount of critical attention already, although, of course, less has been written from Queneau's views on the human value of knowledge and art, suggest a final chapter. The chief merit of Shorley's study, then, is to bring together these disparate approaches in an comprehensive picture of the whole fictional oeuvre.

The method of presentation that he favours does, however, tend to pre-empt the layers as a series of discrete units. So for example, Queneau's language is discussed as a collection of under a separate heading, each listed under a separate heading, each carefully illustrated, and the existing critical literature on each scrupulously acknowledged. The common factor to emerge from these piecemeal discussions is an insistence on Queneau as well as thematic; so that the picture of Queneau that emerges from this critical evenhandedness is correspondingly sober and evenhanded – and perhaps a little too much so.

Shorley's Queneau is a novelist who has certain modernist tendencies towards experimentation and self-consciousness, but who nevertheless limits, being a writer whose ultimate aim is to preserve “harmony and balance” between “production and subversion of text (and) between traditional and experimental methods”. This Queneau is a person who worships the innate inertia of nature through his own intellectual and creative efforts. He has reasonable but not excessive faith in the capacity of art and knowledge to bring out the best in human nature, and his concept of

wisdom is a decent and “positive acceptance of real life in all its contradictory aspects”. In other words, Shorley's meticulous peeling of the several layers of Queneau's oeuvre produces a very balanced onion, an onion that is all balance and no pungency (compare *Zazie*'s “*Doukipudontkan*”). Only in flushes does Shorley point to a more eye-watering and disconcerting Queneau, notably in his introduction and his “monoculture”, where he cites Queneau saying that whatever assertion he finds himself making, the opposite one invariably seems just as true and just as interesting.

Shorley's impeccable scholarship and the clarity of his critical discriminations have in one sense served Queneau well by producing such a serious and substantial account of this neglected novelist. But in another sense, in their very competence they tend to obscure their subject's susceptibility to doubt and uncertainty, and fail to convey adequately his capacity suddenly to see that things are other than what you'd thought, and might possibly be more different still. For all its virtues then, or rather precisely because of them, this book is really just as partial in its account of Queneau as those that it finds wanting.

Ann Jefferson
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Four hours of Freud

The Freud Scenario
by Jean-Paul Sartre
edited by J. B. Pontalis
translated by Quintin Hoare
Verso, £16.95
ISBN 0 86091 121 7

These days, for Sartre fans every day seems like Christmas, as new goodies continue to arrive from the pen of the dead master. Since his death in 1980, six substantial publications have appeared: *Œuvres complètes*, *Le Carnet de la drôle de guerre*, *Cahiers pour une morale*, *Leçons au Collège* et *quelques autres volumes* one and two, *Critique de la raison dialectique* volume two and *Le Scénario Freud*. There have also been major new studies attempting to take account of Sartre's work, such as Annie Cohen-Solal's *Sartre 1905-1980*. Each new work calls for at least some revision to clarify the nature and effect of the various influences on Sartre's thought.

The publication of *The Freud Scenario* provides us with new insights into the influence of Freud's thought on Sartre's intellectual development. It was in 1958 that the American film director John Huston asked Sartre to write a scenario for a film dealing with the conflict-ridden period of Freud's life when he abandoned hypnosis and invented psychoanalysis. Although Sartre's initial synopsis was accepted,



A portrait of the composer Josef Matthias Hauer, painted in 1927 by Christian Schad. The picture is reproduced from *German Art in the 20th Century 1905-1985*, by Christos Joachimides, Norman Rosenthal and Wieland Schmied (Weidenfeld & Nicolson, £40.00).

the full-length scenario was judged by Huston to be far too long, and Sartre's attempt to revise it only added to the length. Huston had the screenplay by film professionals, and so Sartre insisted that his name should not appear among the credits, although he accepted the fact that he had been promised. The film was released in 1962, with the title *Freud, the Secret Passion*, and starred Montgomery Clift and Susanam York (Marilyn Monroe had originally been suggested for the role of the composite female

patient). The first question that this book will raise for the many people who still think of Sartre as an existentialist philosopher is: why should someone concept of the unconscious been prepared to write a film scenario about Freud? Had he not offered the notions of individual responsibility and had faith as an alternative to having to resort to explanations in terms of the unconscious? In fact, Sartre's relationship to Freud and psychoanalysis changed and evolved in a complex and fascinating way, as is evident from a comparison of his early philosophical works, such as *Being and Nothingness* (1943), with the autobiographical *Le Mot pour la mort* (1964), and his later psychoanalytic work, *The Family Idiot* (1971). Critics who objected to his adaptation of Freudian ideas once described him as a “false friend” of psychoanalysis, to which he replied that he preferred the label “critical fellow traveller” (The same criticism and response were used to characterize his relationship to Marxism).

It was only when he eventually threw himself into political activity in the 1950s that he confessed to seeing the kind of neurosis that had dominated

ated his previous work, and he explained his resistance to psychoanalysis as being due to a resistance to face the importance of his childhood. It was then that he had the idea of writing an autobiography dealing with his childhood and this led him to consider undergoing psychoanalysis. He approached his friend and collaborator on *Les Temps modernes*, J. B. Pontalis, with a request that he should carry out the analysis. The request was turned down on the grounds that their relationship was too close.

It is interesting to speculate how different might have been Sartre's perception of his neurosis as portrayed in *Le Mot* if he had undergone early death of his father to account for his own suppressed lack of a superego, and as equivalent to an absence of obedience and aggression. And yet Sartre had at least some of the characteristics of the rebellious son, forever rejecting authority. It is possible that the explanation for this is to be found in the father-substitute figure of Sartre's grandfather on his mother's side, Charles Schweitzer, who is described in *Le Mot* as a “controlling” and “being like ‘Moses dictating the law’”. Sartre's perception of his mother as being like a sister also made him not a grandchild but another son.

Pontalis, in his editor's preface to this book, recalls the sentence from *Le Mot*: “The rule is that there are no good fathers; it is not the men who are at fault, but the paternal bond which is rotten.” It is, nevertheless, around this bond that Sartre ordered his screenplay: Freud is seen as grappling with the figure of his father and then ceaselessly traversing with his teachers and colleagues – Meynert, Breuer, Fliess – that itinerary of attachment,

rejection and rupture, rediscovering in his father, the scientist, then when he gave up the theory, the desired father, seen with the death of his mother as psychoanalysis. Freud is as discovering psychoanalysis against his will, in other himself, to resolve his neurosis and create a new glove in his interpretation. He saw that neurosis was creation, albeit a private one, of meaning for his father. He had no key. As Pontalis how is one to open a struggle the key is inside? Although, philosopher Sartre, still as Freudian notions such as the unconscious and repression, he himself much more sympathetic ideas after reading Sartre's biography of Freud. He said: “That Freud of mine, say, he was neurotic through, indeed, he was so, convert that he completed a Huston, who had committed Freud film script. ‘What's about him is that he doesn't know the unconscious.’ In a sense, no inherent contradiction in Freud's ideas and those of Sartre, as he did with respect to the sociological determining factor: it was also important to discover the individual made out of his circumstances. The individual sent a universal category of circumstances, but in a singular way.”

One reason why the scenario Sartre sent to Huston was so long because it brought to the full understanding Freud as a “universal” some of that ambition that became fully evident in his study of Flaubert. In Sartre, we know about a man? Sartre prepared to travel down every avenue of psychological and sociological investigation. He would have made it intelligible at any time the Jewish Freud, the bourgeois Freud, the Freud-the-father, Freud (the father of fin-de-siècle Vienna) and the father who transcended all frontiers, all on.

It is a remarkable achievement, which testifies to his skills as a writer, that he managed to produce that is coherent and gripping though out. Despite its length, it is a piece of cinema audience's attention, never known. Sartre's own confession, was that “you can get a four-hour film if it is a good film. Texas audience wouldn't stand hours of complexes”.

Kenneth Thompson

Kenneth Thompson is reader in psychology at the Open University and author (with Margaret Thompson) of *Sartre: Life and Works*, New York: Facts-on-File, 1984.

sors the relationship between the ideas and the literary texts. On the other hand, if Bely's ideas are starting point, they tend inevitably to be also your destination.

In his conclusion Professor Elsworth argues that symbolism has been not as a part of modernism, a counter-current against it, because it typically views man as alienated, but as a part of a more meaningful universe. Bely regards as an extreme example of exception even in the context of modernism, “because a belief that man over into certainty was the mark of both his art and life”. That is further justification for examining Bely's theory starts from an awareness of cultural crises, and different modernisms. Professor Elsworth defines it in its refusal to accept the state of affairs, and its quest for a vantage-point from which a better vision could be attained.

John Elsworth

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BOOKS

Right to worship

Religious Toleration and Social Change in Hamburg 1529-1819
by Joachim Whaley
Cambridge University Press, £25.00
ISBN 0 521 26189 9

Histories of toleration usually trace the ideas of high-minded theologians and philosophers against a generalized political and social background. Much rarer, but more valuable, are detailed studies of the actual implementation of toleration.

Hamburg is a particularly good case study to choose. The dynamically prosperous, cosmopolitan and cultured imperial city has had the reputation of being a haven of toleration ever since the 16th century, but it is not a deserved one. Religious minorities enjoyed complete economic freedom, but highly restricted rights of worship, and no rights of citizenship or political

activity before the 19th century. Until then the minorities were small in numbers, fluctuating between 5 and 10 per cent of the total population, but very varied. Successive waves of immigration brought Catholics, Lutherans, French Huguenots, Sephardic Jews from the Iberian peninsula, Ashkenazic Jews from the rest of the empire and Poland.

The uneven flux in their numbers and some disputes within their ranks only partly explain why they did not win a clear right to worship. Political struggles between the ruling senate and bodies representing the citizens affected attitudes towards the Lutherans did disagreements among the Lutherans themselves. Time and again the strongest force resisting change was the orthodox Lutheran clergy, who saw any concessions as a threat to the unity of church and state essential for the survival of the true faith. The population, resentful of the wealthier immigrants, could be whipped up into fiery preaching into violence, as against the Catholics in 1719 and the Jews in 1730. One can only regret that the sources rarely allow Dr Whaley to pluck them as individuals from the mere “mob”.

Several features peculiar to the Holy Roman Empire enabled the minorities to retain a foothold despite the cir-

cumstances which disadvantaged them. Hamburg had to work within the Treaty of Westphalia, which gave certain rights to Catholics, Lutherans and Calvinists even in states and cities of a different faith. Close by, by Altona, from 1644 a Danish city, was always openly tolerant to minorities; merchants could easily live in one city and work in the other. As the 17th century advanced, the residences of foreign diplomats in Hamburg played an increasing role in housing chapels where Christian minorities could attend services while being denied their own places of worship. The city fathers could afford to alienate neither their imperial overlords, who protected the Catholics, nor the Dutch and Prussians, who favoured the Calvinists. The legalistic attitudes of the age – half the senate were lawyers – ensured that the position of most of the minorities was governed by contract, and that the often vague wording of the contracts permitted a stretching of religious activities beyond what the clergy would have liked. It is particularly instructive to have the Jewish groups examined for once alongside the others. Their status was considered almost exclusively in economic terms, so that they were even allowed to build small synagogues, whereas non-Lutheran churches were not permitted.

Money and power

Cardinal Richelieu: power and the pursuit of wealth
by Joseph Bergin
Yale University Press, £20.00
ISBN 0 300 03495 5

In some ways this book is like a giant historical jigsaw puzzle; one derives pleasure from following Dr Bergin as with deft and perceptive touch he steadily creates a coherent picture from his painstakingly accumulated, often fragmentary and frequently captive data. The end result is a highly professional, craftsmanlike monograph, a fascinating piece of historical detective work, a new perspective on one of France's legendary figures, and some perceptive insights into the nature of the ancien régime.

The empirical core of Bergin's study rests on an investigation of Richelieu's investments in office, land, royal domain and revenues, and ecclesiastical benefices. Taking each area in turn he illuminates with meticulous care the steps by which this first son of a provincial gentry family, heir to a modest collection of landed estates in 1619, succeeded within two decades in becoming one of France's richest aristocrats.

Luck of course played its part: Richelieu might well have ended his days a soldier or as Bishop of Luçon had not family fortunes and political events helped him along at crucial moments. Yet Richelieu's driving ambition in part created his own good luck while a combination of administrative competence, ruthlessness and apparently boundless greed made him a formidable figure in the constant struggle for power, wealth and status. He displayed little compunction in applying pressure, both legal and du-gu, in order to round out his landed patrimony, in enticing and bullying officeholders to resign their posts for his own advantage, or in using similar methods to acquire no fewer than fifteen abbies and four priories.

These might have well numbered even more had the Pope not called a halt. Whereas in 1619-20 Richelieu's annual income was probably no higher than 25,000 livres derived largely from course of the next ten years he was able to make investments of about three million which generated an annual income of over 330,000 livres. By the late 1640s his annual revenue mark: Wealth, however, neither tempered the Cardinal's ruthlessness nor moderated his meanness: he kept pensions to the curia and others within his bed-chamber and dues for years, and even short-changed his distinguished portrait painter Philippe de Champaigne. There is more than enough evidence here to dispel the myth of the disinterested statesman; indeed the ever more widespread and bitter criticism of Richelieu's self-aggrandisement seems to have been amply justified.



Cardinal Richelieu

MARY EVANS

However, this study is not primarily about individual motives or worthiness. Bergin rightly eschews anachronistic moral judgements while his passing observations on those other eminent statesmen, Mazzini and Colbert, suggest that Richelieu was really little different from other great figures of the century who in parallel fashion also accumulated immense fortunes. What the author is intent on showing, and in this he succeeds to great effect, is that the first minister's prodigious wealth was inseparably bound up with his possession of power. It rose as he rose. Moreover with Richelieu's power and profit existed in “unmediated collaboration” a central point illustrated over and over again as Bergin's jigsaw puzzle takes shape.

Thus Richelieu's intense involvement in the military and political campaign against La Rochelle in the late 1620s was accompanied by the purchase of land in Anis and Saintonge, and the acquisition of key governorships in the same provinces, together with the highly profitable salt rights of Brouage. As time passed it became increasingly difficult to perceive a line of demarcation between affairs of state and those of Richelieu; the personnel employed were sometimes the same, particularly as the Cardinal relied on great financiers for his private business, and on crown servants in matters pertaining to the Admiralty. By the late 1630s the Cardinal's income as grant *matre*. All the time Richelieu was able to use his access to the councils of state and the higher echelons of the judicial hierarchy to protect his investments and give himself some cover against the possible legal and financial repercussions of his less well founded personal operations.

Although Bergin only alludes to recent controversies about the general nature of French society and the state in the 17th century his book will surely play a decisive role in resolving some fundamental issues. In the first place it will serve as a splendid reinforcement of Daniel Dessert's recent study of the relationship between money and power

even during the second quarter of the 18th century, when in the first flush of the Enlightenment a Society of Patriots was founded in Hamburg, the self-image of the city, which the author extrapolates from its public celebrations, was of a staunchly Lutheran community loyal to the emperor and to its own traditions established at the Reformation. These values were shared by the second generation of patriots who helped Catholics and Calvinists to gain the right to use their own chapels in 1785. The decline in influence of the clergy and the economic crisis of 1763 had prepared the way for the senate marginally to raise the threshold of toleration, but the Lutheran allegiance of all parties to the debate over toleration set strict limits to the advance. Nevertheless, like reforms in education and poor relief, this step was taken some years before the influence of the revolution in France was felt in Germany.

Joachim Whaley's nuanced analysis, steeped in the sources, conveys well the ambivalence and contradiction within which Hamburg society moved crablike towards a limited measure of toleration.

H. J. Cohn

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A jolt from Ruskin

Ruskin and Bradford: an experiment in Victorian cultural history
by Malcolm Hardman
Manchester University Press, £27.50
ISBN 0 1790 1765 3

John Ruskin visited Bradford twice. In March 1859 he delivered the inaugural lecture to the Bradford School of Design and in April 1864 spoke to the powerful manufacturing interests in the town on “the relation of the architecture of public building to daily life”. Although he occasionally toured the surrounding district, these two lectures, the second of which formed the basis of his lecture on traffic in *The Crown of Wild Olive* (1866), directly conditioned the nature of his involvement in Bradford's history.

Malcolm Hardman clearly finds them a sufficient base on which to reconstruct the impact of Ruskin upon the cultural life of Bradford: “A web of connections and co-operations began to emerge, and the commercial and intellectual life of Bradford is an essential part of it”. However, what is presented is a *poppourri* of reflections upon the writings of Ruskin which offer a kaleidoscopic, rather than telescopic, vision of his contribution to the central public debates of the mid-19th century.

This is not to suggest that there are few rewards from reading this book. Malcolm Hardman is knowledgeable

about Ruskin and provides a fresh approach to Bradford's industrial and cultural development – noting the challenge which Ruskin presented to Bradford's industrial middle class. He reconstructs the cultural and artistic activities of such Bradford notables as James Lobbey and Alfred Hardy, touches upon the issue of class relations and expresses Ruskin's concern to provide Bradford manufacturers to look to the quality, rather than quantity, of life and to attempt to combine art with work.

If there is one clear underlying theme, it is that Ruskin sought to act as a link between the Anglican social reform and the radicalism of the 1830s and 1840s and future social reform activities. It was this perception of a “debt to the future” which helped motivate him to contemplate the need for government training schools and manufacturing in *Unto This Last* and to attempt to spur men into unrelenting dedication to public service in *The Crown of Wild Olive*. Hardman sees in the Independent Labour Party and Fred Jowett – the first Labour MP for Bradford – the continuity of the social reform which Ruskin had sustained: “Less obviously, he was helping to prepare the way for the socialists of the 1900s”.

Notwithstanding its merits, this is a book which will frustrate many readers. Tenses are mixed, many paragraphs appear to contain two or three separate themes and there are many flights of argument: typhus in Bradford is mentioned and discussed via references to the River Aire, Melham and Kirkstall Abbey. A more direct and less fragmented approach would have been welcome. Indeed, good editing might well have prevented some sections of this book becoming of merely antiquarian interest.

There are also far too many gaps in the argument and evidence. Even “an experiment in Victorian cultural history” must be more rounded in approach. It is true that Fred Jowett was greatly influenced by Ruskin's *Unto This Last* but it would have been helpful if there had been some detailed explanation of how he and other members of the early political Labour movement were attracted to Ruskin. The mid-19th-century material also lacks depth and understanding about Bradford society, a failing which could easily have been rectified by reference to Jack Reynolds's splendid book *The Great Reformatory*. This appeared in 1983 and, through the medium of Sir Titus Salt, provided a most informed and thoughtful analysis of Bradford society for the years 1800 to 1876.

Fred Jowett recalled, in 1927, how the work of Ruskin could be used to entice even those who could not attend socialist meetings: “If the reader of the handbook couldn't come to the meeting at all events a well selected passage from Ruskin might give his mind a jolt”. Hardman has probably jolted his readers to an awareness of Ruskin's influence upon Bradford. It is thus a pity that the impact of this book is reduced by the absence of a clear pathway through a swamp of detail.

Keith Laybourn

Dr Laybourn is senior lecturer in history at Huddersfield Polytechnic.

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BOOKS

Women in question

Working Women in Recession: employment, redundancy and unemployment
by Roderick Martin and Judith Wallace
Oxford University Press, £22.50 and £9.95
ISBN 0 19 87006 0 and 87005 2
Women and Equal Pay: the effects of legislation on female employment and wages in Britain
by A. Zabala and Z. Tzannatos
Cambridge University Press, £19.50
ISBN 0 521 30188 2

Relatively little was known about women at work prior to the 1960s, and although much research has emerged since, gaps in our understanding are still being identified and filled in. The tradition of neglecting women had its foundations in assumptions that women's economic role was unimportant and that everything that needed to be known about women employees could be captured in a few stereotypes. It has sometimes been difficult to break through these barriers to serious study: women's unemployment, for example, has only recently been the focus of research. When the breakthrough has come, the results have often been surprising; certainly they have been a challenge to earlier preconceptions.

Martin and Wallace set out to study women made redundant in the early 1980s. Their study of five firms in different parts of the country was intended to complement a large-scale survey of women's employment, the Women and Employment Survey, undertaken by the Department of Employment, and the Office of Population Censuses and Surveys. Men's experiences of unemployment were well documented at the time since the loss of a job to someone assumed to be a primary wage-earner was thought to have devastating implications. Women's loss of jobs, however, if they were not assumed to take work seriously, had been thought to be relatively unimportant to them. They could, after all, happily fill up their time with housework.

Like several other studies published in the same year, Martin and Wallace demonstrate unequivocally that such a view of women's redundancy is false. Women's responses to redundancy, like men's, are determined by a complex set of influences: their age, their health, the duration of their unemployment, their level of settlement, their previous work experiences and the prevailing labour market conditions. Women experience the same hardship, poverty, loss pride in their work, and lost satisfaction of independence that men do. Where women may differ from men according to some research, is that they do not see redundancy as a challenge to their gender identity in the way that men, the "breadwinners", do. However, the results of recent research on women's

unemployment are a considerable challenge to earlier stereotypes of employed women.

Martin and Wallace have done a scholarly and valid sociological job of contributing to the new, more accurate conception of how women face and experience redundancy and unemployment.

Academic economic research has also been focused in recent times on answering important policy questions about women's employment, more so in the USA than in Britain; however, we are beginning to catch up. The study of women's employment has undoubtedly given policy-related research in Britain a large boost. *Women and Equal Pay* is the latest and most sophisticated of a series of publications which have addressed the question of whether the Equal Pay Act has had any impact on women's wages relative to men's. It is not a book for non-specialists.

The ratio of women's to men's wages increased by 15 per cent in the 1970s appearing to close the gap. The authors' answer is that the legislation did reduce the unexplained gap between women's and men's wages by between 30 and 50 per cent. Researching such a conclusion involves the complicated multivariate exercise of making sure that there are no other concurrent events or changes which might explain the improvement. The authors consider and dismiss a range of alternative explanations which include changes in

the structure of women's employment, a deterioration in men's pay or distributional changes. More controversially they argue that flat-rate incomes policies operating over the 1970s were not responsible for closing the gap. Their approach to capturing the effects of incomes policies is not entirely convincing, for example, in their treatment of part-time work. Nevertheless, the results coincide with other British studies of the effects of equal opportunity policies.

Perhaps there are lessons for us to learn in Britain from the fact that more numerous American studies reach diametrically opposed conclusions on the question of whether anti-discrimination legislation has been effective. Whether British research will uncover other possible explanations of some of the women's improvement in relative earnings in due course remains to be seen; the deterioration in the skill differentials between male employees over the 1970s is one possible uninvestigated explanation of the improvement for women. The authors' results support the case for strengthening anti-discriminatory legislation as a means of improving women's position in the labour market.

Shirley Dex

Dr Dex is lecturer in economics at the University of Keele.

Countries in debt

Emerging Risk in International Banking: origins of financial vulnerability in the 1980s
by P. N. Snowden
Allen & Unwin, £16.50
ISBN 0 04 332098 8
Debt and Danger: the world financial crisis
by Harold Lever and Christopher Huhne
Penguin, £2.95
ISBN 0 14 052361 8
Bank Lending to Developing Countries: the policy alternatives
by Fred C. Bergsten, William R. Cline and John Williamson
Institute for International Economics, £11.95
ISBN 0 88132 032 3

For many less developed countries (LDCs), the oil price rises of 1973 marked the end of an epoch differently than for the industrial world. Whereas growth slowed substantially in the OECD economies, as Snowden points out, middle income non-oil LDCs, especially the major exporters of manufactured goods, maintained fairly strong growth performances for the ensuing decade.

This development was based on an accumulation and a redistribution of world debt. Oil producers, unable or unwilling to reinvest all their gains, put them on short-term deposit in the Euromarkets or directly with western commercial banks. The banks then "recycled" the money to the middle income LDCs who were thereby en-

abled to continue their economic growth without balance of payments adjustments to higher oil prices.

As long as world demand was expanding, these countries could generate sufficient export earnings to service and refinance an increasing volume of short-term debt. However the second round of oil price rises together with a shift toward restrictive monetary policies in the major OECD countries, produced an unexpectedly severe and prolonged global recession. High American interest rates and overvalued exchange rates in some debtor economies exacerbated the debt problem. In August 1982 the Mexican crisis, a 90-day suspension of external debt payments, showed how delicate the world financial system had become. Commercial bank finance dried up and the less developed countries began making massive net financial transfers to the West for debt service.

The International Monetary Fund stepped in to organize a package that would prevent Mexico formally defaulting, and insisted on western commercial bank participation. Mexico was not the only country in difficulties. Argentina was suffering from unique problems that in 1983 gave her debt service obligations of \$1.5 billion. Her foreign exchange receipts, Brazil's debt service/foreign exchange ratio had risen to 93 per cent.

Western banks and therefore the entire western economies were in some danger of going down with these LDCs, for lending was extremely concentrated among banks and countries. The debt were to be written off, Citicorp would lose about three quarters of its issued capital and Chase Manhattan would lose 57 per cent. Such a disaster would probably trigger other country defaults; if Mexico, Argentina and Venezuela also defaulted the nine American "money-

centre" banks would have lost 127 per cent of their capital in June 1984. These banks would then not merely be illiquid, which the Federal Reserve could cope with, but insolvent: their net worth would be negative. If uninsured depositors were to be saved, a massive nationalization programme would be called for, far greater than that required for Continental Illinois in 1984. The Federal Deposit Insurance Corporation (FDIC) has reserves of about \$17 billion, including \$4.5 billion committed to Continental Illinois, compared with the \$34 billion capital of the nine largest US banks in September 1984. FDIC might therefore be unable to repeat the earlier rescue on the larger scale required.

All three books broadly agree on this outline of the debt problem. They differ in their intended audiences and, to a lesser extent, in their policy recommendations. Snowden, aiming principally at higher education, wants to understand why and how banks allowed country loans to become so threateningly large, why it is that the "invisible hand" does not seem to have produced the "best" of all possible worlds in international banking. His argument is that the Eurodollar market acted as a "veil of ignorance", making bank liquidity seem greater than it actually was. Although a retail banking market properly engages in maturity transformation, the Euro-markets are wholesale markets also doing that, allowing individual banks not to be mismatched. There, recipients of large deposits lend to other banks. The consortia principle and syndicated loans similarly limit any one bank's exposure to a particular borrower. But large individual deposits in these markets violate the stochastic principle on which retail banking is based.

In addition sovereign lending raises (cable, video, kitchen appliances, personal computers, and so on).

There is much insight in *Future Work* and some telling criticism of orthodoxies: Robertson deplores the limited concept of work as employment which is shared by capitalists and communists alike and tries to picture alternatives at a time when the "new technology" is stifling imaginative projections of possible futures.

However, having no notion of how we might achieve change - it seems a matter of people becoming "conscious" of the stultification of the "factory mentality" - Robertson does not get us very far. A requisite of change surely is agency, whether class, corporate or state. Since the dominant agencies in Britain are determined to continue on the same lines as before I anticipate "future work" will be similar, and as scarce, as it is at present.

Frank Webster

Frank Webster is lecturer in sociology at Oxford Polytechnic.

the problem for credit markets that borrower may choose to default, a loan size increases so does the number of calculated defaults. Restrictive loan sizes such as "country lines" therefore reduce defaults and interest charges. The market also enjoys lower "costs" than established foreign lending banks because they have different initial portfolio positions, not because they are not "priced". Their entry reduces the "price" of foreign lending and encourages established banks with a foreign loan commitment that they would have chosen had they known returns would decline. Snowden uses the inadequacies of the Eurodollar market remedied by greater supervision over bank lending and by international deposit insurance schemes, with a minimum based upon central bank policies of bank portfolio size and discouraging imprudence. More accessible and marketable loan instruments, also desirable, he believes.

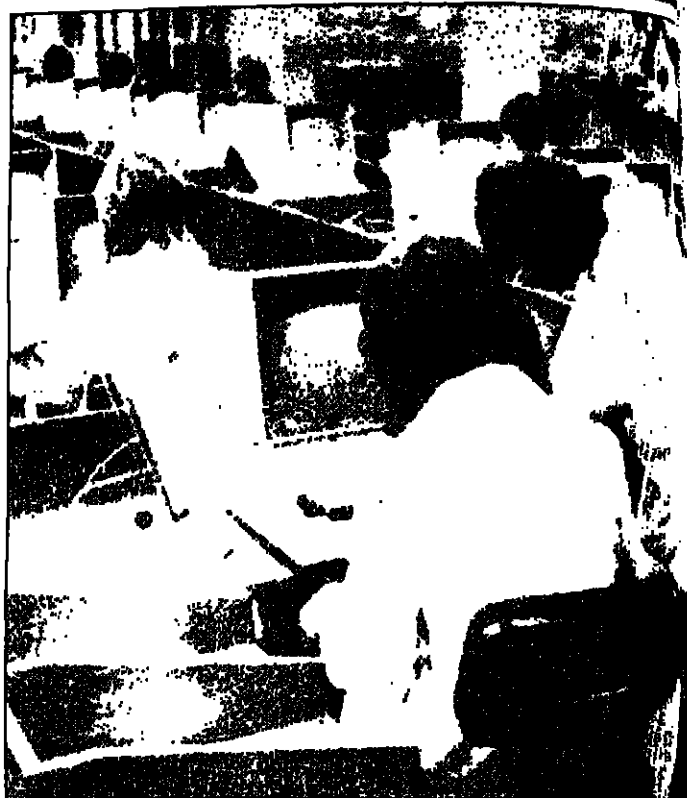
Lever and Huhne offer a popular account of the debt crisis, one that is well supported by academic apparatus of footnotes. He maintains that the situation is desperate because the balance is tippling: of default by the LDCs. The consequences imposed by the IMF adjustment programmes, the impossibility of receiving positive transfers in the foreseeable future, developed countries' LDC accumulation of foreign exchange reserves for cash payments, spread of barter trade, all point to default in the future. Snowden's reforms must reverse the transfer of LDCs. Lever and Huhne propose a form of insurance for new bank lending analogous to export credit guarantee schemes.

Bergsten, Cline and Williamson amine 24 possible approaches to ifying bank loans to debtor countries and analyse their implications for lenders, and the system as a whole. Their study was undertaken by the request of the American Bankers Association. They are more optimistic than Lever and Huhne's. They point out that the Brazilian export rose 23 per cent, American non-oil exports increased 10 per cent. But they too believe in sustained IMF involvement as necessary to prevent future crises, and they also want to see encouragement to non-bank long-term lending.

Clearly the international debt problem is a major issue that will not disappear if ignored. Each of the books offers plausible solutions to the present difficulties based upon analysis, and for that reason are welcomed. That they each offer different answers is largely because of their different value judgments as to who should pay.

James Foreman-Peck

Dr Foreman-Peck is lecturer in economics at the University of York.



Women on a data processing production line in a Manchester office the mid-1970s, a picture from *Objects of Desire: design and use 1750-1980* by Adrian Forty (Thames & Hudson, £12.95).

BOOKS

MATHEMATICS AND PHYSICS

Is elegance enough?

To Acknowledge the Wonder: the story of fundamental physics
by Euan Squires
Adam Hilger, £18.95 and £9.95
ISBN 0 85274 786 1 and 798 5
Elementary Particles
(second edition)
by I. S. Hughes
Cambridge University Press, £27.50 and £9.95
ISBN 0 521 26092 2 and 27835 X

During 1982-83 a series of historic discoveries at the proton-antiproton colliding beam accelerator at the European Centre for Nuclear Research (CERN) provided dramatic confirmation of the essential truth of what had some years earlier come to be called the "standard model" of matter at the smallest known distance scales. Things are made of quarks and leptons, which interact by exchanging the quanta (photons, W and Z bosons and gluons) of three basic force fields (electromagnetic, weak, and strong, respectively).

Further, the detailed dynamics of these separate force fields is now understood as arising, in each case, from the same underlying principle. Consequently, as Professor Squires writes, "The story which describes our present knowledge of these matters" is no longer a catalogue of unrelated facts; rather it is about several elegant, simple and unifying themes. . . . The time is thus ripe for popular expositions of this story - the more so as the relevant experiments are, by some standards at least, expensive. Squires quotes a worldwide cost of £700 million per year at present.

Squires is not simply concerned to tell a good success story - although he does this well. Instead, he attempts a much more difficult task: to communicate to "a wide variety of readers" an appreciation of the beauty or elegance of many of the crucial theoretical ideas - especially, though not exclusively, of recent ones. More than that, he wants to share with the reader his belief that the search for theoretical beauty can lead to physical truth. For example,

with regard to gauge theories, he says that "such a beautiful idea just has to be relevant to the real world", and that while the beautiful story he will tell "is undoubtedly a great tribute to the power of the human intellect", it is "also, of course, a far greater tribute to the one (call it God, chance, or whatever) who conceived its subject". In short, his readers will be invited "to acknowledge the wonder".

With beauty as a strong sub-theme, Squires invites comparison with John Polkinghorne's 1979 book *The Particle Play*, in which he wrote that "this most abstract of subjects [mathematics] is the one which holds the key to the understanding of the universe shows a relation between the workings of our minds and the structure of the world". I believe this is one aspect of what the writer of the Fourth Gospel is telling us". Although both the theology and the syntax are tighter than in Squires, a certain congruity of purpose is apparent.

Whereas Polkinghorne tried to dispense with formal mathematics altogether, on the grounds that more would inevitably be required "than the layman is likely to have at his command", Squires thinks that the "purpose of mathematics is to make difficult things easier". In language somewhat reminiscent of an examination syllabus, he declares: "Familiarity with mathematical notation and manipulation (at about the standard of A level students of mathematics or physics) will therefore be required by readers who wish to follow all the details". Those details are given and highlighted as they go.

Is Squires' approach successful? As a professional particle theorist it is difficult for me to judge. Certainly I thought that his discussion (new to me) of electromagnetism did successfully convey the power, and beauty, of general symmetry arguments - supplemented by more than a touch of hindsight and the use of A-level vectors. Maxwell's remarkable prediction of electromagnetic waves, and his identification of light as such a wave, are very well described. But what about quantum electrodynamics and gauge theories generally? Here, Polkinghorne achieved greater success by placing more reliance on quasi-geometrical ideas of symmetry - which are both fairly easy to visualize and also important to the physics. Instead, Squires emphasizes the simplicity and the power of the single idea of local phase invariance - but the reader may well wonder wherein, precisely, the beauty lies. The conventional answer is, of course, in the symmetry.

Much beauty is in the eye of the beholder. I cannot mystify myself. Squires' motivation for composite models of the W and Z bosons, and I

do not find models in which they are bound states of "quark" particles at all elegant. (I should also have such a fate to befall the quantum light.) Nor do I feel that a standard grand unified theory which has 24 gauge quanta is "rather less elegant" than an alternative theory which has 224 of them. Indeed this raises a fundamental question, much debated in the trade: is elegance enough? All of us are susceptible to some extent at least, by Paul Dirac's oft-quoted remark that "it is more important to have beauty in one's equations than to have them fit experiment". Ludwig Boltzmann, on the other hand, pronounced that elegance was for tailors.

There is a wider sense in which we may question the sufficiency of beauty or elegance. In the "enda" to his book, Squires tells us of his belief that physics "exists through a design and purpose in the conscious mind of one whom I call God", and invites us to share God's pleasure, recorded in *Genesis*, in beholding all that He has made. God is the Greatest Mathematical Physicist of them all. But the God of *Genesis* soon began to have certain regrets. We cannot ignore the different and terrible kind of beauty that was born in the Alamo desert in 1945; nor the race between east and west. "The physicists," said Robert Oppenheimer, "have known Sin." We need more than aesthetics to guide us to the whole truth about the world and God.

Squires' book is a remarkable tour de force, and bears vivid witness to his own excitement and wonderment at the "new physics". That by Professor Hughes is a more straightforward affair - a second edition of an established undergraduate textbook first published in 1972 - in which the author places his emphasis largely on the physical properties of the particles and on the experiments which enabled their determination. Following a broadly historical route, Hughes traces the discovery of all elementary particles right through to the quarks, the W and Z bosons, and the gluons.

I particularly liked the way in which, in most cases, Hughes includes reproductions of actual data, or of graphs from the original papers, used with a reference. Although the theoretical presentation is admittedly scantier and in parts insecure, such relatively mind blemishes could be eliminated during the reprinting that this useful book will surely receive.

Ian Aitchison

Ian Aitchison is lecturer in theoretical physics at the University of Oxford, at present on leave at CERN, Geneva.

Points of a plane

Introduction to Complex Analysis
by R. A. Priestley
Oxford University Press, £8.50
ISBN 0 19 853247 4

Complex analysis is one of the most powerful and beautiful creations of differential mathematics. It takes the Newton and Leibniz and extends it to that of the complex numbers, where minus one has a square root. It has applications in many branches of science, notably in aerodynamics, optics, quantum physics, electronics, and electrical engineering; it provides a powerful technique for summing series, evaluating integrals, or locating the zeros of polynomials; and it is being used in every mathematician's toolkit. The real number system can be represented geometrically as the points of a line. Analogously, the complex numbers form the points of a plane. The richer geometry of the plane leads to novel insights into the special phenomena that give the subject its special flavour; and it is the corresponding geometrical insights that enrich mathematics.

For example, the fundamental topic of complex analysis is the theory of integration. In real analysis one integrates a function between two end points to obtain a definite integral. In complex analysis there is more than one route between two given points, the corresponding concept being a contour integral, in which the function

is integrated along a curve in the complex plane, running from one end point to the other. This immediately raises the question: how does the value of the integral depend on the curve? The answer, traditionally named for Augustin-Louis Cauchy, is as follows. If two curves between the same end points can be continuously deformed into another, without crossing any points at which the function becomes infinite, then the integrals along the two curves are equal. Pursuing this line of discovery that it is the topology of the plane that governs the deep structure of complex integrals.

Any text on complex analysis must grapple with these phenomena and their underlying geometry. Analysis can be a highly technical subject, full of epsilons and deltas and difficult manipulations. Performing these with confidence rather than real numbers can all too easily result in hopeless confusion. Yet in many ways complex analysis is simpler than real analysis. For example, if a function is differentiable once then (locally) it is differentiable infinitely many times and has a convergent power series expansion. Nothing remotely like this is true in the real case.

It is the teacher's job to bring out this simplicity. In this, Priestley's book is an unqualified success. It contains a number of pictures to illuminate the geometry. It avoids unnecessary complications such as the Jordan curve theorem (every closed loop has an inside and an outside) by restricting the definition of "curve" to something more manageable, yet sufficient for practical purposes. And it makes sense of the disorienting complexity of complex functions to have more than one value, by introducing the machinery of multi-valued functions.

In addition to the basic topics -

power series, contour integrals, Cauchy's theorem, angularities, Laurent's theorem, the residue theorem - there are two chapters of special interest in terms of applications. One is on Fourier and Laplace transforms, the other on conformal mappings. Both are important in the solution of differential equations. The Fourier and Laplace transforms provide alternative methods for solving linear differential equations - ordinary and partial - and also lead directly to important branches of mathematics such as harmonic analysis. Conformal mapping is a geometric theory of transformations of the plane with applications to fluid dynamics and potential theory, and culminates in a solution of the Dirichlet problem.

The book continues a trend established by several others on the same subject that have appeared in recent years, to emphasize the geometric nature of complex analysis and to simplify its technical trappings. It includes many warnings to the student of potential disaster. Best of all it explains beforehand what it is trying to achieve. Priestley says that his aims are "to be practical without being utilitarian and to be rigorous without being over-sophisticated or fussy". These are admirable aims, admirably achieved.

Ian Stewart

Ian Stewart is lecturer in mathematics at the University of Warwick.

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BOOKS

MATHEMATICS AND PHYSICS

Electric current

From Maxwell to Microphysics: aspects of electromagnetic theory in the last quarter of the nineteenth century by J. D. Buchwald
University of Chicago Press, £59.50
ISBN 0 226 07882 5

The phrase "classical physics" can be rather confusing. Although in general we speak of classical physics as opposed to quantum physics, this simple usage suggests a homogeneous progression that simply does not exist. Even if we restrict ourselves to electromagnetic theory and to the late 19th century – putting aside classical mechanics, thermodynamics and the whole of "early" classical physics – the phrase still carries two distinct associations. On the one hand, it calls to mind James Clerk Maxwell's theory of the electromagnetic field, perhaps the archetypal theory of classical physics and that which we would most naturally contrast with the quantum theory. On the other hand, it calls to mind H. A. Lorentz's electron theory – the theory actually displaced by quantum theory.

But surely, it will be argued, Lorentz's theory was a development of Maxwell's? And so it was, both in Lorentz's own view and in terms of the prevailing historiography, which tends to focus, naturally enough, on the electromagnetic theory of light. Maxwell's theory, in which light emerged as an electromagnetic wave form, set the seal on the classical wave theory of light. Lorentz's own early interests lay in the application of electromagnetic theory to optical problems; indeed, in his electron theory, the wave theory of light was maintained, to be challenged only in the 20th century by the new quantum theories. But if we look not at



"Will it [the cannon ball] fall back down again?", asks the legend in this woodcut from an edition of René Descartes' correspondence. The experiment was proposed by Father Merseme, contemporary and friend of Galileo, to test the behaviour of falling bodies. From the revised and updated edition of I. Bernard Cohen's *The Birth of a New Physics* (Norton, £14.95).

the nature of light but at that of electricity itself, and at that of matter, then Lorentz's theory was far from being a development of Maxwell's: the two were in fact in strict opposition. Indeed, had Maxwell lived to see the electron theory, he would certainly not have recognized it as a version of his own.

Maxwell's theory, both in his own hands and for the most part in those of his British successors, was a pure field theory. Not only light but also everything else was continuous: there were no such things as discrete electric or material particles. Although Maxwell would talk conventionally of such particles, scientifically speaking they were no more than labels describing the apparent effects of continuous fields. Thus, an electric current in a

wire, for example, was not for Maxwell a stream of electricity; rather it was a manifestation of an electromagnetic state existing in the space, or field, surrounding that wire. The field was both a valuable portrait of physics as it was practised in the late 19th century and a useful corrective to those who – by focusing on the theorist light and heat rather than on the electricity per se – have tended to play over the revolutionary aspects of the electron theory.

Faced with this contrast between a pure field theory and what Buchwald describes as a microphysical theory (one that described a microstructure, in terms of electrons), the question arises as to how physicists managed, in the late 19th century, to get from one to the other without any apparent radical theoretical departures. How did what in Buchwald's view was quite

a revolutionary change come to pass without any overt revolution? Unlike the more obvious conceptual leaps on which the history of science tends to focus, however, this change must necessarily be sought in the medium of the technical physics that is this what makes it interesting. In any attempt to paraphrase the story for a technically non-proficient audience would almost certainly fail to defeat the point. Accepting this, Buchwald has rightly written unequivocally for the trained physicist.

The result is a somewhat heavy going time that will be quite unappealing to anyone lacking a fairly strong background in physics. It does present, however, a fascinating story that is a greater justice than any other I think of to what physicists were really thinking and doing in this period. Not content to present the history in the language of modern-day physics, which he sees with some justification as being thoroughly imbued with notions of Lorentz-style microphysics, Buchwald goes to great pains to portray 19th-century field theory in its own modern overtones.

With this as a basis, Buchwald seeks to show in detail how the theory is systematically misunderstood by historians on the one hand and by the course of a series of technical analyses, the pure field concept can be supplemented and supplanted by concepts relating to a supposed microstructure, and in particular by the electron. The resulting book is both a valuable portrait of physics as it was practised in the late 19th century and a useful corrective to those who – by focusing on the theorist light and heat rather than on the electricity per se – have tended to play over the revolutionary aspects of the electron theory.

John Hendry

John Hendry is the author of *The Creation of Quantum Mechanics* (Reidel, 1984) and *James Clerk Maxwell and the Theory of the Electromagnetic Field* (Adam Hilger, 1986).

Finite steps

Discrete Mathematics by Norman L. Biggs
Clarendon Press: Oxford University Press, £30.00 and £15.00
ISBN 0 19 853252 0 and 853266 0

"Discrete mathematics deals with calculations involving a finite number of steps rather than limiting processes. It is not a new field, but recent rapid growth in the areas of computer science, statistics, and operations research have served to stimulate interest in and shape the structure of this branch of mathematics." Although about 20 years ago there were virtually no courses in discrete mathematics in British universities, as this extract from Norman Biggs' book explains the whole field has been transformed by the practical needs of others.

Research into combinatorial mathematics and graph theory has been given more urgency because of diverse applications in the physical

sciences, computing, statistics and economics. Indeed, the emphasis in the past on calculus courses in the United States has begun to yield to courses in finite mathematics and combinatorics – such courses increasingly forming a major part of the curriculum. This move has been less apparent in British universities, causing one recent writer to recommend devoting more time to developing skills in combinatorics, rather than spending it on subjects like measure theory (Lebesgue, Tonelli, Radon-Nikodym and their drag gang) or the "featureless deserts of vector spaces and modules".

Biggs' book is therefore a timely and important addition to the literature. Although other books have covered similar material, this one stands out for its clarity of exposition, its careful organization, and for the way in which it reduces unnecessary abstraction to a minimum. Its claim that it can be approached by anyone with basic competence in arithmetic and experience of simple algebraic manipulations seems rather fanciful, but it can certainly be used – and is in fact specifically aimed at – by computer scientists and others for whom mathematics may be a tool rather than an end in itself.

Yield points

Liquids and Solids by M. T. Sprackling
Routledge & Kegan Paul, £5.50
ISBN 0 7102 0484 1

As one of a series of short student physics texts aimed at covering topics which may be themselves form the basis of a course of lectures or at least a portion of one, this book describes the mechanical properties of solids and liquids and explains them in terms of microscopic behaviour on an atomic scale. Its coverage, however, is considerably more restricted than its title implies. For example, electrical and optical properties are not considered at all. *Mechanical Properties of Solids and Liquids* would have been a more appropriate title. Within these constraints, however, it is remarkably clear and easy to follow. Those physics

or engineering undergraduates for whom the book is intended should experience no difficulty in using it.

An introductory chapter on the basic structural characteristics of solids and liquids is followed by one on the so-called "elastic" properties of solids – those deformations of a solid produced by external forces that disappear when the applied stress is removed. Various fundamental material parameters such as Poisson's ratio, Young's modulus and rigidity are defined and their role described in geometries and under a variety of external influences such as loading, pressure and torsional twists. Here, fortunately, because everything takes place below the yield point, the materials survive.

This is definitely not the case in the next chapter, in which irreversible processes such as plastic deformation, work-hardening and brittle fracture are considered. Clearly, understanding the reasons for the failure of materials under conditions of high stress, such as occur in jet aircraft, is important. Minute defects inherent in all solids – such as dislocations –

cracks or other flaws – all play an important part in causing failure.

The next four chapters on the properties of liquids deal with such topics as flow viscosity, Reynolds' number, remarkable properties of helium, Euler's equation of motion, Bernoulli's equation, and Navier-Stokes equation, and Poiseuille flow in tubes. Surface tension and wetting and capillary action are described in a separate chapter. A chapter on the properties of polymers and liquid crystals provides a good insight not only into existing materials but also into the difficulties involved with treating these more complex materials. The text is well illustrated, with useful examples and answers included in an appendix.

E. A. Davis

E. A. Davis is professor of physics at the University of Leicester.

A second edition of J. S. Blakemore's *Solid State Physics* has been published by Cambridge University Press at £25.00 and £9.95.

BOOKS

MATHEMATICS AND PHYSICS

Objective measure

Entropy in Relation to Incomplete Knowledge by K. G. Denbigh and J. S. Denbigh
Cambridge University Press, £17.50
ISBN 0 521 25677 1

In this well-written book, father and son Denbigh track down and seek to destroy the missile of subjectivity launched against our beloved concept of entropy – a thermodynamic quantity which measures disorder in some restricted technical sense.

Their first argument is drawn from Denbigh, the elder. It says roughly: spectroscopy is hard-nosed and venerable; it is used in astronomy and in chemistry to great effect; and its inferences in terms of energy levels can be used to calculate the entropy of a substance. Calorimetry can be used to the same effect using completely different data. The two calculations agree, say the Denbighs. Hence, entropy values must correspond to objective reality.

A second argument, really my own, but positively hinted at by the authors, is this: using thermodynamics, express the entropy of a model system in terms of energy, volume and number of particles – quantities that have never been accused of subjectivity. But subjectivity on the left of an equation implies subjectivity on the right of that equation. Hence, either entropy is not subjective, or, if it is subjective, then thermodynamics fails. However, as the latter is too awful a thought for any good thermodynamicist to contemplate, entropy is not subjective and our *jurisprudence* is home and dry. They might have made more of this argument.

What have other people said about this matter? First, the famous Amer-

ican chemist G. N. Lewis said in 1930 that entropy increases if data is "erased". False. For if a multiplet spectral line is short-sightedly viewed as a singlet, the entropy of the system is decreased. Indeed, if all detail is erased so that a system is with certainty in just one available (though very coarse) state, then the entropy may be regarded as zero. Second, Max Born remarked in 1949 that irreversibility is due to the introduction of ignorance into the fundamental laws. False. Irreversible processes go on, after all, even if there is no one in the quad to introduce ignorance. It is these sort of points which show a lack of care; and the Denbighs are right to pounce on them.

Also germane to subjectivity is the question of the relation of entropy to "disorder" for as James Clerk Maxwell pointed out in 1875, confusion and order are not properties of things in themselves but exist "only in relation to the mind which perceives them". As this seems eminently sensible, the authors felt forced to destroy the relation between entropy and disorder. For "the mind that conceives them" has just the air of subjectivity which the authors wish to eradicate. Does entropy reflect disorder? No, say the Denbighs; and, homing in on their target, they proceed to give two reasons for their choice.

First, as systems attain equilibrium, they become more uniform; and this uniformity is a kind of order. Second, the adiabatic crystallization (that is without heat loss) of a supercooled liquid takes place with entropy increase. But a useful disorder to a liquid, this, entropy can increase with order in perfectly normal systems, just as it can increase with disorder, the authors implying that this eliminates another potentially subjective element from the concept of entropy.

In fact, I have also maintained that entropy and order can increase together, but only in special cases such as are provided by growing systems. For normal systems, most scientists regard entropy and disorder as coupled together. Indeed, the authors' argument, order seems to be used in a colloquial rather than a technical sense. "The highly ordered system that the system is subject to certain constraints which relations which could be

had tried to think up possible sources of cosmic X-rays – were gloomy about the prospects. But Giacomini was more impressed by his scientific godfather Bruno Rossi who "expressed a deep seated faith in the boundless resourcefulness of Nature, which so often leaves the most daring imagination of man far behind". Between 1962 when, with a first sounding rocket he discovered the source of X-rays outside the solar system, and 1981 when his giant orbiting X-ray telescope Einstein was shut off for lack of fuel, Giacomini led a thrilling voyage of exploration which more than vindicated Rossi's faith. By the time he left the field to direct the launch of the optical space telescope (this August) X-ray astronomy had become a mature subject that illuminates almost every facet of the cosmos.

Now Giacomini and his long-standing collaborator Wallace Tucker have written a stimulating account of their adventures. "This survey", they hope "gives some sense of the travail, the excitement and the delight that has attended the birth and growth of X-ray astronomy". At the first reading I couldn't put it down, and a second more careful study only confirmed its quality. Professionals will enjoy it for its front-line atmosphere, its human asides and its sally. The amateur astronomer will find in it the first readable and comprehensive account of the X-ray universe. I would also recommend the book to anyone, scientist or not, who wants to know something of what the current excitement in astronomy is all about.

Michael Disney

Michael Disney is professor of astronomy at University College, Cardiff.

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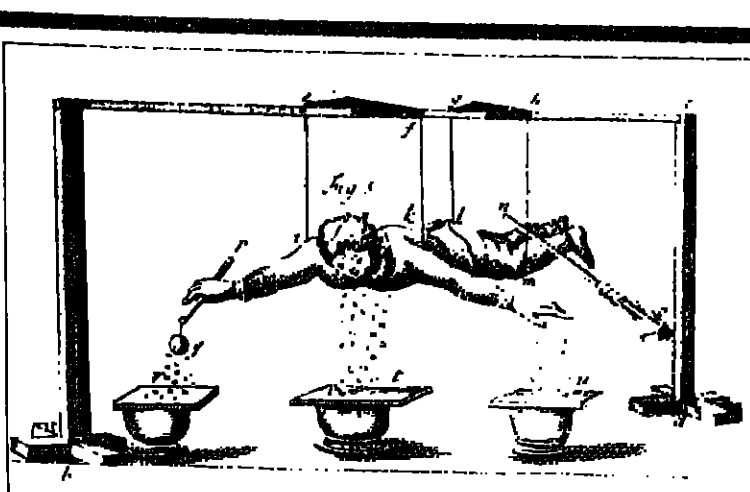
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Stephen Gray's experiment to demonstrate the electrical conductivity of a body is illustrated in this mid-18th-century engraving.

relaxed and would then lead to less order. The colloquial use of the term "order" would enable one to say that ash is more orderly than the original layer. But in the technical sense of order, the carbon bonds and so forth make the coal the more orderly material. The second argument seems to ignore the evolution of heat in the transition, which adds to the disorder of the system.

Next comes coarse-graining (chapter three). This arises from the need in statistical mechanics to average over groups of quantum states and so develop a coarser description in terms of these new more nearly macroscopic states. How big should the group of microscopic states be over which we should average? Some authors have

seen subjective elements in this procedure, and the Denbighs remind us that there is a great variety of views on this topic. When a theory of macro-states in terms of micro-states is developed (and it does not yet exist), then the size of the group of states will probably be part of it, and in that sense I can agree with the authors that this apparently subjective feature of entropy will disappear in due course.

In chapter four, the authors offer a novel solution of the Gibbs paradox (due to K. G. Denbigh and M. L. Redhead) as well as a survey of four other solutions. The paradox itself is simple: When two gases diffuse into each other adiabatically the change of entropy is positive. It is zero when the gases are identical. The limiting procedure of gradually making the gas

molecules more alike has absolutely no effect until – bang – at the point of identity the entropy change drops precisely to zero. The explanation of this state of affairs comes in various forms – some of them simple, others (including Denbigh's) rather complicated – and it is a matter of taste which is preferred. What is clear is that the discussion must involve the experimental apparatus which is used – a crude experiment might not be able to distinguish the molecules even if they are different. Thus, entropy has in my view a meaning only against the background of the type of apparatus envisaged as well as the questions asked about the systems. This does not mean that it is "subjective"; indeed, it could be that the authors agree with this view. Their opinion is firmly that entropy is an objective quantity; but even a length measurement depends on the coarseness of the scale, even though length is an objective quantity.

This unusual and thought-provoking book can be recommended to a broad class of philosophically inclined readers. They must be warned, however, that they will not find much about the important question of incomplete knowledge in the quantum mechanical context, rightly judged beyond the scope of this slim volume. I congratulate the authors on having picked up one philosophically important question and illuminated it so thoroughly from many different angles.

P. T. Landsberg

P. T. Landsberg is professor of mathematics at the University of Southampton.

Sources of error

Practical Statistics for Experimental Biologists by A. C. Wardlaw
Wiley, £27.50 and £11.95
ISBN 0 471 90737 5 and 90738 3

The muse of this book should be Robert Burns. Seeing ourselves as others see us is always arresting. So an introduction to statistics by an experienced biologist invites recommendation if only for its capacity to deliver a good dose of practical sense.

Writing for biologists who want to do experiments and who inevitably find that clear conclusions do not fall out easily, Professor Wardlaw's main concern is to emphasize that results will be confused unless the experiment was designed with an appropriate statistical analysis in mind. Expertise is about intervening, not about passively waiting for nature to speak to us.

By concentrating on biologically useful topics, the text goes further than would a more general introduction. Wardlaw advocates clarity in writing and diagrams, and sets a fine example by his own elegant style. He explains how to make inferences about means, proportions, and counts. He describes

how and why biologists investigate the association between variables. And he provides eminently practical advice on the design of experiments and on bioassays.

All this is informed by a shrewd awareness of the different sources of error in a biological experiment. On the one hand is measurement error. Wardlaw does not merely assert that mistakes will be made. He actually presents data on, for example, readings from pipettes, and provides informative descriptions of such devices as the Helber counting chamber. Discussion of the practice of measurement ought to be a standard part of statistics textbooks, but I am not aware of any other which takes this essential task so seriously.

Errors, on the other hand, also arise from the inherent variability of biological material. Wardlaw emphasizes repeatedly the difficulty of drawing general conclusions from biological investigations. No single experiment can ever be definitive; no statistical rule should be used without careful consideration of biological matters; and no scientist should ignore the established empirical practice of those who have gone before.

Wardlaw illustrates these points with a wealth of detail about real experiments, the mathematics being kept to a minimum. One valuable consequence is that an inescapably biological interpretation is given to the conditions that have to be met before particular statistical

methods may be used. We might choose a Poisson distribution, for example, not only because the data look Poisson, but also because we have biological reasons for judging it to be appropriate.

The book has a few faults. Most damaging is that particular sets of data are subjected to different forms of analysis, which sometimes sits uneasily with the emphasis that the analysis should be prefigured in the very design of the experiment. Ignoring blocks, for example, is not as straightforward as it may seem here: it can interfere with the validity of the analysis in ways which are rather complex to sort out theoretically. In addition, the avoidance of computers sometimes means that the text is inclined to get bogged down in arithmetical details. And its educational value suffers from a complete absence of exercises for students.

None of these reservations prevent me recommending the book strongly. Many biologists will surely find it more accessible than more mathematical rivals. And it should be compulsory reading for statisticians – students or not – to remind us that we exist solely to provide a service for science.

Lindsay Paterson

Lindsay Paterson is lecturer in the department of actuarial mathematics and statistics at Heriot-Watt University.

Chinese postmen

Algorithmic Graph Theory by Alan Gibbons
Cambridge University Press, £27.50 and £8.95
ISBN 0 521 24659 8 and 28881 9

What is the shortest route by road from Land's End to John O'Groats? What is the smallest amount of fuel needed for a railway network connecting a given number of cities? How many colours are needed to colour the countries of a map if neighbouring countries must be coloured differently? Graph theory and network analysis added with problems like these, ranging from puzzles of a recreational nature to industrial problems the efficient solutions for which have resulted in savings of millions of pounds.

Over the past 20 years have seen important changes in the teaching of graphs and networks. In the mid-1960s courses were rare and the field was frequently looked down on by mathematicians, who should have known

better. Since then, largely due to advances in high-speed computation and to the ever-increasing applicability of the subject in practical situations, the field has assumed major importance. There are now many courses in the area, some of which concentrate on the theoretical aspects of the subject, whereas many are becoming increasingly concerned with its algorithmic aspects.

Alan Gibbons' book, intended for courses of this latter type, succeeds admirably. However, as it is primarily aimed at computer scientists, the reader is assumed to have experience of computer programming in a high-level language such as Algol or Pascal – all the algorithms being presented in this form. Moreover, as the style is compressed and the explanations frequent terse, the book would be unsuitable for a student completely unfamiliar with the subject studying in isolation. As a classroom text, however, with worked examples added by the instructor, it is likely to work well.

The book is written from a theoretical point of view, with few examples or case-studies of the many practical applications available. Chapter one introduces the basic concepts of graph theory, but here the diagrams are confusing in that some represent



An elderly mandarin: this watercolour and gouache Chinese portrait of the late 18th century is an early example of painting produced for the western market. It is included in the exhibition "The China Trade" running from now until April 6 at the Royal Pavilion, Brighton (closed Mondays).

Appointments

HERIOT-WATT
Lectureships: Dr S. P. Male (building); Dr J. Mackenzie (building); Dr A. Griffith (building); R. K. Stocks (building); S. S. Then (building); Dr J. H. Kershaw (mathematics); A. Sadi (mathematics); J. L. Jensen (petroleum engineering).

MANCHESTER
Lectureships: Dr L. C. Best (cell biology); Dr C. P. Bradley (general practice).

The University of Wales College of Medicine has announced the appointment of Dr William Jones Williams to an honorary chair in the department of pathology.

Mr Jack Perry, chairman of the London Export Corporation (Holdings) Ltd, has been appointed visiting professor by the University of International Business and Economics, Peking.

Honorary degrees

The London School of Economics and Political Science has announced the award of six honorary fellowships: Mr Roland Dumas, minister for foreign affairs in the French government and former research student in the LSE; Professor James B. Joll, fellow of the British Academy and Stevenson professor of international history; The Rt Hon Sir Kenneth Clark, prime minister of Fiji; The Rt Hon Lord Scarman, chairman of the Law Commission; Professor Shu-Chieh Liang, president of the Chung-Hua Institution for Economic Research, Taipei, Taiwan; The Rt Hon Lord Weinstock, managing director, General Electric Co Ltd.

NOTICE BOARD

Grants

BRISTOL
Professor E. L. Dagless, Dr D. T. Paddon, Dr M. J. P. Bolton and Dr G. H. Norton, £13,378 from SERC (space-based image and pattern processing); Dr C. G. Proud, £44,727 from SERC (structure, phosphorylation and control of eukaryotic protein synthesis); Dr F. Cervoni, £10,425 from MRC (anorectal sensation in preservation of anal continence); Dr A. M. Jordan and Dr D. G. Godfrey, £97,433 from Overseas Development Administration (trypanosoma congolense drug sensitivity); Mr P. J. B. Smith and Dr M. O. Symes, £32,824 from South Western Regional Health Authority (75 selenomethionine by prosthetic carcinoma cells); Mr W. Barker, £18,480 from Bernard van Leer Foundation (traveller parent project);

LIVERPOOL
Dr G. Embury and Mr K. S. Last, £31,394 from ICI (glycosaminoglycans in gingival crevicular fluid as prognostic indicators of active periodontal disease); Dr D. A. Brown and Mr K. Roberts, £486,285 from Health Promotion Research Trust (sports centre usage and the quality of life); Mr C. V. F. Kenney, £79,530 from SERC (small producers and policy making in Brazilian agriculture); Professor F. M. Johnson, £20,400 from Unilever Research (identification and application of human trophoblast-associated antigens in human pregnancy); Dr B. K. Patil, £5,000 from Wellcome Trust (mode of action and in vivo significance of alpha-fetoprotein in selective control of T lymphocyte proliferative responses); Dr P. Fleming, £19,922 from Foundation for Study of Infant Deaths (development of stability of respiration in infants); Professor J. D. Gault, £16,000 from Novo Laboratories (diabetes adjustment and insulin delivery system).

STIRLING
Dr D. Budgen, £81,500 from SERC (study of software development based on Masoco); Peter Roberts, £136,500 from SERC (fundamental study on internal culture for tropical countries); Dr D. H. Allen and Dr J. L. Pile, £30,826 from SERC (well Bridge Fabrication Unit company programme); Dr J. R. Why, £38,166 from SERC (molecular biology of Schwann cell); Dr J. R. Why, £30,751 from SERC (of translocated proteins).

Publications

The Further Education Staff College has published the first in a new series of "Studies in Further Education". Entitled, *In Search of the Responsive College*, Ernest Theodossin's 113-page

study is based on interviews with educators and industrialists about perceptions of the relationship between FE colleges and employers. ISBN 0268 5817, ISBN 0 907659 38 1.

How to win research money and influence people; the third in the University of Birmingham's Educational Development Advisory Group series of occasional papers. *Writing Applications for Grants*, edited by W. E. Burt, R. J. D. Rutherford. The price, £2.50, post free from the publisher, ASTM, University of Birmingham, P O Box 363, B15 2TT.

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Universities



Macquarie University, Sydney
LECTURER IN MATHEMATICS
(Fixed Term)
School of Mathematics and Physics
The appointment is for a fixed term of five years and is for a fixed term of five years.

The appointee will be expected to obtain outside research funds to support his or her research in undergraduate teaching in 1986.
Appointment will be in August 1986, or as soon as possible thereafter, and will be for four years, with the possibility of extension for a further two years.
16 April 1986.

The University of Sydney
LECTURER (TENURABLE) IN PHARMACY PRACTICE
Ref. No. 815
Department of Pharmacy
Applicants should be graduates in pharmacy with a higher degree in Pharmacy Practice or related areas. Preference will be given to a person with teaching experience and a proven research record. The appointee will be expected to teach in the area of Pharmacy Practice at the undergraduate and postgraduate levels, to initiate research, to supervise student research projects and to maintain an active participation in other academic and/or community pharmacy activities.
28 April 1986.

La Trobe University, Melbourne
CHAIR OF BOTANY
This position will be vacant from the retirement of the incumbent Professor Dr W. W. B. Walling, F.R.S., at the end of 1986 and it is anticipated that the new appointee will take up the position in mid-1987.
The appointed professor will be chairman of the department for five years, and be expected to provide academic leadership and to foster the development of the discipline at undergraduate, postgraduate and research levels.
The Department of Botany is an integral part of the School of Biological Sciences which also includes departments of Biochemistry, Genetics and Human Variation, Microbiology, and Zoology. Students can study biology to fourth-year undergraduate (BSc) level and to PhD level as postgraduates.
30 June 1986.

LECTURER (TENURABLE) DEPARTMENT OF ITALIAN
Ref. No. 816
Applicants are invited from persons with a higher degree and teaching experience in Italian Language and Literature. The appointee will be expected to teach in the area of Italian Language and Literature in the Department of Italian Studies and to supervise student research projects and to maintain an active participation in other academic and/or community activities.
28 April 1986.

LECTURER IN ZOOLOGY
(Fixed Term - 4 Years)
School of Biological Sciences
New South Wales Government to take over the teaching and research interests of Dr. W. W. B. Walling, F.R.S., at the end of 1986 and it is anticipated that the new appointee will take up the position in mid-1987.
The appointed professor will be chairman of the department for five years, and be expected to provide academic leadership and to foster the development of the discipline at undergraduate, postgraduate and research levels.
The Department of Botany is an integral part of the School of Biological Sciences which also includes departments of Biochemistry, Genetics and Human Variation, Microbiology, and Zoology. Students can study biology to fourth-year undergraduate (BSc) level and to PhD level as postgraduates.
30 June 1986.

THE CHINESE UNIVERSITY OF HONG KONG

Applications are invited for the following posts tenable from August 1st, 1986:

FACULTY OF SCIENCE
1. Lecturer in Electronics (ref. 7/85/2/268)
Applicants should possess a higher degree, preferably a Ph.D., and have a minimum of five years' experience in electronics. The appointee will be expected to teach and to supervise student research projects and to maintain an active participation in other academic and/or community activities.
2. Lecturer in Government and Public Administration (ref. 8/5/85/2/269)
Applicants should have a Ph.D. or J.D. or its equivalent and be ready to offer a minimum of five years' experience in government or public administration. The appointee will be expected to teach and to supervise student research projects and to maintain an active participation in other academic and/or community activities.

University of Stirling

Department of Sociology

LECTURESHIP IN SOCIAL WORK
Applications are invited for a Lectureship in Social Work. The appointee will be expected to teach and to supervise student research projects and to maintain an active participation in other academic and/or community activities.

Social work education at Stirling is located within the Department of Sociology which offers a range of undergraduate and postgraduate degrees. A two-year undergraduate degree in Social Work is offered. The Department also offers a range of continuing education courses. The appointee will be expected to teach and to supervise student research projects and to maintain an active participation in other academic and/or community activities.

Further details can be obtained from the Secretary, Department of Sociology, University of Stirling, Stirling, FK9 4LA. Tel: 0767 78171. Ext. 2314. Applications should be sent to the Secretary, Department of Sociology, University of Stirling, Stirling, FK9 4LA. Tel: 0767 78171. Ext. 2314. Applications should be sent to the Secretary, Department of Sociology, University of Stirling, Stirling, FK9 4LA. Tel: 0767 78171. Ext. 2314.

Open University viewing

Saturday March 8

- 8.45 Telecommunication Systems. Multiplexing. (T21; prog 3)
- 7.10 Education for adults. Learning in groups. (E255; prog 1)
- 7.35 The Religious Quest. The Wages of sin: religion in a Hindu village, part II. (A238; prog 6)
- 8.00 Biochemistry and Cell Biology. Muscle: a question of fuel supply. (S235; prog 1)
- 8.50 Discovering Physics. Acceleration at constant speed. (S214; prog 2)
- 7.10 Rome: The Augustan Age. Town and country. (A293; prog 4)
- 7.40 Language Development. Calling the tune. (P232; prog 2)
- 8.05 Third World Studies. Subversion - a time for change. (U204; prog 2)
- 8.30 Popular Culture. TV and Christmas: constructing the past. (C203; prog 2)
- 8.55 Ethnic Minorities and Community Relations. Colombia in reverse: 1, when push comes to shove. (C236; prog 2)
- 8.20 Art in Italy, 1400-1500. Rocco: brocade street. (A232; prog 2)
- 8.40 Computer Based Information Systems. LOLA case study. (M254; prog 2)
- 10.10 Introduction to Pure Mathematics. Orthogonality of bases. (C202; prog 2)
- 10.35 Mathematical Models and Methods. Complex numbers: an alternative form. (C204; prog 2)
- 11.00 Introduction to Calculus. Sin (Alpha + beta). (A243; prog 3)
- 11.05 Complex Analysis. Introduction. (M232; prog 1)
- 11.50 Engineering Product Design. Behind the seat. (T202; prog 2)
- 12.15 Graphs, Networks and Design. Telecommunication networks. (T236; prog 2)
- 12.40 Modern Art and Modernism. Monet. (A215; prog 6)
- 12.00 Open Forum. Information programme for OU students
- 12.30 Crossfertilisation. Mantis. Isotopes in ecology. (S236; prog 1)
- RADIO 3 VHF
6.30 Contemporary Issues in Education. Education Bulletin 1. (E200; prog 4)

Sunday March 9

- 8.45 Biology. Brain and Behaviour. Ethology: news to newborn. (S226; prog 2)
- 7.10 Studies in Pure Mathematics. Orientability. (M263; prog 2)
- 7.30 Engineering Mechanics. Solids. Linkage mechanisms. (T232; prog 1)
- 8.00 Ecology. Tropical rainforests. (S238; prog 18)
- 8.30 The Nature of Chemistry. Vibrational spectroscopy and molecular geometry. (S204; prog 2)
- 8.55 The Physics of Matter. A macroscopic viewpoint. (S272; prog 2)
- 7.10 Biology: Form and Function. Membranes. (S202; prog 2)
- 7.40 Conflict and Stability in the Development of Modern Europe. Engines of war. (A269; prog 2)
- 8.05 17th Century England. Court patronage. (A233; prog 3)
- 8.30 World Politics. Potsdam 2: the confrontation. (D233; prog 2)
- 8.55 Politics, Policy and Administration. The dilemma. (D236; prog 3)
- 9.20 Social Sciences foundation course. Innovation and conflict. (D101; prog 0)
- 9.45 Maths foundation course. Inverse functions. (M201; prog 4)
- 10.10 Arts foundation course. Edinburgh observed. (A101; prog 5)
- 10.35 Science foundation course. Drifting continents. (S101; prog 6)
- 11.00 Decision Making in Britain. "No Minister" policy in the Civil Service. (D236; prog 3)
- 11.25 Business Economics. The fall and rise of the small baker. (D234; prog 2)

Tuesday March 11

- 8.55 Science foundation course. Drifting continents. (S101; prog 6)
- 22.30 Contemporary Issues in Education. Who's the mother? (E200; prog 4)
- RADIO 3 VHF
6.30 Modern Art and Modernism. First Impression: an exhibition. John House. (A215; prog 5)
- a VHF
22.30 Open Forum. Information programme for OU students
- RADIO 4 VHF
6.30 Open Forum. Information programme for OU students
- 22.30 Open Forum. Information programme for OU students

Wednesday March 12

- 8.55 Computer Based Information Systems. Information systems and data bases. (M232; prog 1)
- 22.30 Arts foundation course. Edinburgh observed. (A101; prog 5)
- 22.35 Biology. Brain and Behaviour. Ethology: news to newborn. (S226; prog 2)
- RADIO 3 VHF
6.30 Open Forum. Information programme for OU students
- RADIO 4 VHF
6.30 Open Forum. Information programme for OU students
- 22.30 17th Century England. Posture: part 1. (A201; prog 2)
- 22.35 Social Sciences foundation course. Acts of God? (Amaritya Sen). (D102; prog 3)

Monday March 10

- 8.55 Maths foundation course. Inverse functions. (M201; prog 4)
- RADIO 3 VHF
6.30 Contemporary Issues in Education. Education Bulletin 1. (E200; prog 4)
- RADIO 4 VHF
6.30 Contemporary Issues in Education. Education Bulletin 1. (E200; prog 4)
- 22.30 Arts foundation course. Art and the historian. (A101; prog 5)
- 22.35 Social Sciences foundation course. Acts of God? (Amaritya Sen). (D102; prog 3)

Conference

CONFERENCE ON MULTI-ETHNIC HIGHER EDUCATION IN INNER CITY AREAS

South Bank Polytechnic, London Road Site, London SE1
Monday 7th - Friday 11th April 1986
Speakers (include)

- Christoph Ball National Advisory Board
- Sylvia Ballat New York City Board of Education
- John Belshon Polytechnic of North London
- Joshua Smith California Community College System
- Peter Newsum Commission for Racial Equality

- Day 1 - Community Perceptions of Higher Education
- Day 2 - Access and Exit Routes
- Day 3 - Adjusting Higher Education to Community Needs
- Day 4 - Curriculum Issues
- Day 5 - Political Imperatives and Resources

Further Details
The Conference Office, South Bank Polytechnic
103 Borough Road, London SE1
TEL 01-928 5849

Thursday March 13

- 8.55 Social Sciences foundation course. Innovation and Conflict. (D102; prog 6)
- 22.30 Weekend Outlook
- 22.35 Third World Studies. Subversion - a time for change. (U204; prog 2)
- RADIO 3 VHF
6.30 Open Forum. Information programme for OU students
- RADIO 4 VHF
6.30 Open Forum. Information programme for OU students
- 22.30 Open Forum. Information programme for OU students

Friday March 14

- 8.55 Contemporary Issues in Education. Who's the mother? (E200; prog 4)
- 7.50 Weekend Outlook
- RADIO 3 VHF
6.30 The 19th Century Novel and the Novel: Nature of Wuthering Heights (A101; prog 5)
- * Repeat programme

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Universities continued



RICHMOND COLLEGE

The American International College of London

CHAIRPERSON, DIVISION OF HUMANITIES

Richmond College invites applications for a senior appointment as Chairperson of the Division of Humanities. The Division offers BA majors in English Literature and British Studies, and includes programs in English Language Development (ELD), through Upper Division advanced composition, writing, modern languages, history, philosophy, and religion. BA majors in history and modern languages are in the planning stage.

In addition to teaching duties, the Chairperson is responsible for all aspects of work in the Division, including: primary responsibility for hiring faculty; supervision of 8 full-time and about 20 part-time faculty; curriculum development and program planning; budgeting; participation in College governance; and advising of students. The Chairperson reports to the Academic Dean.

Qualifications:

The Chairperson of the Division of Humanities (a) should be an experienced teacher with a PhD in any Humanities discipline, such as English, comparative literature, linguistics, history, philosophy, or religion; (b) should have at least two years' experience in academic administration; (c) should have a proven ability to direct a diverse faculty in program development and research and desirable.

DIRECTOR ENGLISH LANGUAGE DEVELOPMENT PROGRAM

Richmond College also invites applications for a Director to teach within and to administer the English Language Development Program (ELDP) of the Division of Humanities. As a degree-granting American liberal arts institution with an international undergraduate body, Richmond College offers a unique opportunity to develop and administer the ELDP. The Director will be responsible for the ELDP, which is an integral part of the College's commitment to international education. The Director will be responsible for the ELDP, which is an integral part of the College's commitment to international education. The Director will be responsible for the ELDP, which is an integral part of the College's commitment to international education.

The Director has primary responsibility for all aspects of the ELDP, including: curriculum development; teaching; supervision of staff; and advising of students. The Director will be responsible for the ELDP, which is an integral part of the College's commitment to international education. The Director will be responsible for the ELDP, which is an integral part of the College's commitment to international education. The Director will be responsible for the ELDP, which is an integral part of the College's commitment to international education.

Qualified applicants should send a letter of application, curriculum vitae and the names and addresses of two referees to: Dr. J. H. Burnett, Academic Dean, Richmond College, Queens Road, Richmond, Surrey TW9 1AB. Interviews will take place in April 1986. Both appointments commence 1st September 1986.

THE UNIVERSITY OF SHEFFIELD

DEPARTMENT OF ELECTRONIC AND ELECTRICAL ENGINEERING

Microprocessor Unit

SENIOR EXPERIMENTAL OFFICER

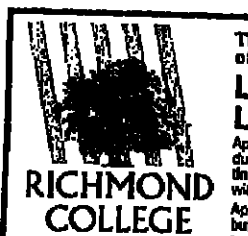
Applications are invited for a post of Senior Experimental Officer in the Microprocessor Unit of the Department of Electronic and Electrical Engineering. The Unit plays a central role within the Department's extensive teaching and research activities and the appointee will be actively involved in the day to day management and future development of the Unit. In particular, the appointee will be involved with the design and operation of hardware and software for microprocessor and microelectronic systems. Opportunities exist for candidates with interests in a range of applications of the hardware design of digital and analogue circuits and the use of assembly language to the complex logic of real time operating systems and image processing.

The post is available for a period of five years in the first instance. A review will be taken after the initial three years and it is possible that a permanent appointment will then be authorised.

Salary would be in the range IA for Other Related Staff £7,820 - £12,635 (under review) according to age, qualifications and experience.

Informal enquiries should be made to Professor G.S. Hobson, Department of Electronic and Electrical Engineering, University of Sheffield, Mappin Street, Sheffield, S1 3JD (Tel. 0742-78555 ext 5142).

Further particulars are available from the Personnel Department (Academic Staffing), University of Sheffield, Sheffield, S10 2TN to whom applications (8 copies) including a curriculum vitae and the names of two referees should be returned by 21 March 1986. Please quote reference R.3580/1.



The American International College of London
LECTURER II/SENIOR LECTURER, ECONOMICS
Applications are invited for the above vacancy commencing 1st September 1986. The appointee will be responsible for teaching and supervising students in the Department of Economics and Business Administration. The appointee will be responsible for teaching and supervising students in the Department of Economics and Business Administration. The appointee will be responsible for teaching and supervising students in the Department of Economics and Business Administration.

THE UNIVERSITY OF SHEFFIELD

DEPARTMENT OF CONTROL ENGINEERING

SENIOR PROGRAMMER

Arising from funds made available under the Engineering and Technology Programme, applications are invited for a post of Senior Programmer in the above Department. Candidates should be graduates with experience of programming in assembler, high level and real-time languages to support teaching and research in the general area of data acquisition, signal processing and computer control. Duties will involve systems support work for a range of microcomputers; production, testing and documentation of software; and assistance with a large multi-user minicomputer system.

Initial salary will be on the scale IA for Other Related Staff, £7,820 to £12,635 (under review) according to age, qualifications and experience.

Informal enquiries should be made to Professor H. Nicholson, Department of Control Engineering, University of Sheffield, Mappin Street, Sheffield, S1 3JD (Tel. 0742-78555 ext. 6133).

Further particulars are available from the Personnel Department (Academic Staffing), University of Sheffield, Sheffield S10 2TN, to whom applications (8 copies) including a curriculum vitae and the names of two referees should be returned by Friday 21 March 1986. Please quote reference R.3580/1.

UNIVERSITY OF EDINBURGH

PRINCIPAL

Dr. J. H. Burnett has intimated his retirement from the post of Principal of the University of Edinburgh with effect from 30th September 1987.

The Curators of Patronage of the University of Edinburgh, who have the statutory duty of appointing the Principal, now invite any individual of appropriate experience and background who is interested in appointment to this post, or anyone wishing to suggest any names for consideration, to communicate in confidence and not later than 30th April 1986 with the Secretary to the Curators, Mr. A. M. Currie, OBE, BA, BLitt, Old College, South Bridge, Edinburgh EH8 9YL, from whom further information is available.

(0178)

Colaiste na hOllscoile Corcaigh

University College Cork

DEPARTMENT OF COMPUTER SCIENCE

Applications are invited for two full-time permanent posts as Assistant Lecturer or College Lecturer in the Department of Computer Science.

The salary scales are: College Lecturer IRE12,740-IRE15,161 Bar IRE14,358-IRE19,354 p.a.; Assistant Lecturer IRE11,088-IRE12,258 p.a.

Application forms and further details of posts may be obtained from the undersigned.

Latest date for receipt of completed applications is Friday 11 April 1986.

M. F. Kelleher, Secretary

University of Strathclyde

DEPARTMENT OF PSYCHOLOGY

TEMPORARY LECTURESHIP

Applications are invited from candidates with relevant experience for a Temporary Lectureship (tenable for 3 years) in Cognitive Psychology. Candidates should have a PhD and an active interest in a Cognitive Psychology - Cognitive Science topic.

Salary on Lecturer Scale: £7,520-£14,925 p.a. (under review), USS benefit.

Applications and further particulars (quote Ref: 14/86) are available from Staff Office, McCaig Building, University of Strathclyde, 16 Richmond Street, Glasgow G1 1XQ. Closing date for applications: 15 April 1986.

University of Manchester

CHAIR IN GERMAN

The University of Manchester invites applications for a Chair in German from candidates with a PhD and an active interest in German language and literature. The appointee will be responsible for teaching and supervising students in the Department of German Language and Literature. The appointee will be responsible for teaching and supervising students in the Department of German Language and Literature. The appointee will be responsible for teaching and supervising students in the Department of German Language and Literature.

Salary within the range for Professors. Superannuation.

Applications (one copy suitable for photocopying) giving full details of qualifications, experience, and the names of three referees should be sent to the Registrar (A.A.), University of Manchester, Oxford Road, Manchester, M13 9PL by Friday 11 April 1986. Particulars of the appointment may be obtained from the Registrar (A.A.), University of Manchester, Oxford Road, Manchester, M13 9PL. Please quote reference R.3580/1.

Further particulars are available from the Registrar (A.A.), University of Manchester, Oxford Road, Manchester, M13 9PL. Please quote reference R.3580/1.

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THE CONTINUING EDUCATION AND TRAINING CONSORTIUM OF "THE FOUR"

The Universities of Manchester and Salford, the University of Lancaster and the University of York are forming a Consortium for Continuing Education and Training. The Consortium will be responsible for providing continuing education and training for staff and students of the four universities. The Consortium will be responsible for providing continuing education and training for staff and students of the four universities. The Consortium will be responsible for providing continuing education and training for staff and students of the four universities.

Applications are invited for a post of Director of the Consortium. The Director will be responsible for providing continuing education and training for staff and students of the four universities. The Director will be responsible for providing continuing education and training for staff and students of the four universities. The Director will be responsible for providing continuing education and training for staff and students of the four universities.

Salary: £12,000 per annum. The Director will be responsible for providing continuing education and training for staff and students of the four universities. The Director will be responsible for providing continuing education and training for staff and students of the four universities. The Director will be responsible for providing continuing education and training for staff and students of the four universities.

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The University of Papua New Guinea

Port Moresby

LECTURER IN INTELLECTUAL ECONOMICS

Applications are invited for a post of Lecturer in Intellectual Economics. The Lecturer will be responsible for teaching and supervising students in the Department of Economics. The Lecturer will be responsible for teaching and supervising students in the Department of Economics. The Lecturer will be responsible for teaching and supervising students in the Department of Economics.

Salary: £12,000 per annum. The Lecturer will be responsible for teaching and supervising students in the Department of Economics. The Lecturer will be responsible for teaching and supervising students in the Department of Economics. The Lecturer will be responsible for teaching and supervising students in the Department of Economics.

Further particulars are available from the Registrar (A.A.), University of Papua New Guinea, Port Moresby. Please quote reference R.3580/1.

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Universities continued

The Australian National University

Applications are invited for a post of Lecturer in the Department of Economics. The Lecturer will be responsible for teaching and supervising students in the Department of Economics. The Lecturer will be responsible for teaching and supervising students in the Department of Economics. The Lecturer will be responsible for teaching and supervising students in the Department of Economics.

Salary: £12,000 per annum. The Lecturer will be responsible for teaching and supervising students in the Department of Economics. The Lecturer will be responsible for teaching and supervising students in the Department of Economics. The Lecturer will be responsible for teaching and supervising students in the Department of Economics.

Further particulars are available from the Registrar (A.A.), Australian National University, Canberra. Please quote reference R.3580/1.

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University of Newcastle upon Tyne

Applications are invited for a post of Lecturer in the Department of Economics. The Lecturer will be responsible for teaching and supervising students in the Department of Economics. The Lecturer will be responsible for teaching and supervising students in the Department of Economics. The Lecturer will be responsible for teaching and supervising students in the Department of Economics.

Fellowships

University of St. Andrews
GLENFIDDICH RESEARCH FELLOWSHIP IN SCOTTISH HISTORY
 Applications are invited for the Glenfiddich Research Fellowship in Scottish History for two years from 1st October 1988. The Fellowship is intended to support research in Scottish history. The Fellow will be expected to conduct research in a suitable area of Scottish history and to undertake a limited amount of teaching in the field.
 Salary: £26,854 p.a. plus £2,500 per annum, plus £1,500.
 Applications (two copies) should be sent to the Registrar, University of St. Andrews, St. Andrews, Fife, KY16 9SS, by 1st April 1988. The names of successful candidates will be published in the University Calendar for 1988-89.
 Further particulars may be obtained from the Registrar, University of St. Andrews, St. Andrews, Fife, KY16 9SS. Please quote reference no. 150085.

Polytechnics

PORTSMOUTH

FACULTY OF BUSINESS, ECONOMICS, EDUCATION & MANAGEMENT

School of Educational Studies

LECTURER IN DRAMA

Ref: 134d
 Applications are invited for the post of Lecturer in Drama. The post, which will be on Lecturer II scale, is to cover the work of a member of staff on secondment, and will be tenable from May 1988 or as soon as possible thereafter, until Easter 1989 in the first instance. Candidates should have a degree in drama or theatre studies and have wide experience of practical drama in school, TIE or community theatre. The person appointed will work largely on the Bed (Hons) degree.
 Salary: up to a maximum of £10,455.
 Application forms and further particulars from Personnel Office, Nuffield Centre, St. Michael's Road, Portsmouth. Tel: (0705) 825451.
 Closing date: Monday 24th March 1988.

POLYTECHNIC

Huddersfield Polytechnic

Department of Catering Studies

LECTURER II/SENIOR LECTURER IN HOTEL MANAGEMENT REF: ACA619A

A vacancy exists in the Department of Catering Studies to teach Hotel Management on the BA (Hons) Hotel and Catering Administration and HND in Hotel, Catering and Institutional Management courses, and the Postgraduate Diploma in International Hospitality Management. The successful candidate will have experience in areas such as operational and corporate practices in the hotel industry, within a framework of economic analysis, and domestic and international tourism.
 The ideal candidate will be a graduate in hotel and catering management at first and preferably higher degree level, with managerial experience in a hotel company. Economics graduates with a postgraduate qualification in tourism or other relevant subjects will also be considered.
 In addition to teaching the successful candidate will eventually be expected to contribute to the work of the Hotel and Catering Research Centre.
 Salary: L11 £8,076 - £12,945
 SL £11,958 - £14,046 (Bar) - £15,045
 Application forms and further details (please send SAE) may be obtained from the Personnel Office, The Polytechnic, Queensgate, Huddersfield, HD1 3HD and should be returned to that office not later than 21 March, 1988.

TEESSIDE POLYTECHNIC
 Department of Business and Professional Studies
LECTURER II/SENIOR LECTURER IN BUSINESS INFORMATION SYSTEMS
 The Department of Business and Professional Studies is seeking to make a key appointment in the field of Business Information Systems. The person appointed must be competent in the application of micro computers and main frame systems to business problems and the teaching of Business Studies. Requirements for the post might result from either an academic qualification in computing with experience of the Business Studies fields, together with either a post-graduate qualification in computing or industrial experience in computing.
 SALARY: £8,076-£12,945 (efficiency bar) - £14,046 (work bar) - £15,045 per annum. The salary at appointment will be no greater than £12,945 per annum.
 Closing date for applications is 21 March, 1988.
 Application forms and further particulars from Personnel Section, Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland TS1 3BA. Telephone (0842) 218121, Extension 4114.
 An Equal Opportunity Employer.

TEESSIDE POLYTECHNIC

Department of Business and Professional Studies

LECTURER II/SENIOR LECTURER IN BUSINESS INFORMATION SYSTEMS

The Department of Business and Professional Studies is seeking to make a key appointment in the field of Business Information Systems. The person appointed must be competent in the application of micro computers and main frame systems to business problems and the teaching of Business Studies. Requirements for the post might result from either an academic qualification in computing with experience of the Business Studies fields, together with either a post-graduate qualification in computing or industrial experience in computing.
 SALARY: £8,076-£12,945 (efficiency bar) - £14,046 (work bar) - £15,045 per annum. The salary at appointment will be no greater than £12,945 per annum.
 Closing date for applications is 21 March, 1988.
 Application forms and further particulars from Personnel Section, Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland TS1 3BA. Telephone (0842) 218121, Extension 4114.
 An Equal Opportunity Employer.

Polytechnics continued

The Polytechnic of North London

Ref. No. 18

HEAD OF DEPARTMENT OF APPLIED SOCIAL STUDIES Grade VI

Applications are invited for the post of Head of Department of Applied Social Studies. The Department offers education and training in Social Work, health visiting, district nursing and social research at degree, diploma and post graduate level. Persons with suitable academic and/or professional qualifications in the social sciences, Social Work or Health Studies, and with experience of social research are eligible.
 Previous management experience is essential in order to lead this large department with an able and dedicated staff group, and students from a wide educational background.
 Salary: £19,653-£21,549 inclusive of London Allowance.
 Application form and further details are obtainable from The Personnel Office, The Polytechnic of North London, Holloway Road, London N7. Telephone 609 9913 (24 hour answerphone service).
 Closing date for receipt of applications is 31st March 1988. THE POLYTECHNIC OF NORTH LONDON IS AN EQUAL OPPORTUNITIES EMPLOYER.

SCOTTISH COLLEGE OF TEXTILES

A Scottish Central Institution of Higher Education

DEPARTMENT OF TECHNOLOGY

Applications are invited from suitably qualified persons for the following three posts falling vacant due to retirements in the Clothing Studies Section. The College offers sandwich courses leading to a BSc in Textiles with Clothing Studies, a College Associateship in Clothing Studies at professional level, a Postgraduate Diploma course and higher degree research.
 POST 1. Lecturer in Clothing Technology with specialisation in pattern construction and garment assembly in the area of light clothing.
 POST 2. Lecturer in Clothing Technology with specialisation in pattern construction and garment assembly applied to men's and ladies' tailored type garments.
 POST 3. Lecturer in Clothing Production - experience required in Production Management and the use of modern technology. Experience in the use of computer applications an advantage.
 Applicants should be preferably well qualified at degree or A.C.F.I. level, with appropriate industrial experience. One of the posts could be at Senior Lecturer A level for a person with the appropriate teaching experience. Appointments to commence 1st September 1988.
 Salary Scale: Senior Lecturer A: £13,710 - £17,280 (Bar £15,219)
 Lecturer A: £9,321 - £14,718 (Bar £13,710)
 Further details and application forms available from: The Principal, Scottish College of Textiles, Galeshield, Selkirkshire TD1 3HF (Telephone 0896 3381).
 CLOSING DATE FOR RETURN OF COMPLETED APPLICATION FORMS THURSDAY, 20TH MARCH, 1988.

NEWCASTLE UPON TYNE POLYTECHNIC

Faculty of Business and Management

School of Business Analysis

LECTURER II/SENIOR LECTURER (2 Posts) IN BUSINESS ANALYSIS

Ref. A9/86
 Applications invited from suitably qualified persons with expertise in the use of Business Information Technology in one or more of the following areas:
 Business Policy and Business Decisions; Management Science; Operational Research and Quantitative Business Methods; Management Information Systems; Office Information Systems and Information Technology.
 Participation is also expected in course administration and development. The School is particularly interested in candidates who offer recent business or industrial experience of a higher degree, but newly qualified people are encouraged to apply.
 For an informal discussion interested applicants should contact Don Cassell, Head of School of Business Analysis, Tel: 0632 326002, Ext. 3323. Salary Burnham P.E. L11 £8,076-£12,945 p.a. SL £11,958-£14,046 (Bar) £15,045 p.a.
 For further details and application form please call our 24 hour telephone answering service (0632 333126) or write enclosing a SAE to: Business Analysis, School of Business Analysis, Newcastle upon Tyne Polytechnic, Eldon Building, Eldon Place, Newcastle upon Tyne NE1 8ST, to whom complete forms should be returned quoting the ref. by 21st March, 1988.

REMINDER
 Copy for Classified Advertisements in the **THES** should arrive not later than 10 a.m. Monday preceding publication

Bristol Polytechnic

Department of Education

ASSISTANT MANAGER - SPECIAL EDUCATION MICROELECTRONICS RESOURCE CENTRE

An experienced teacher with drive, energy and enthusiasm is required to assist the Manager in the operation of the Resource Centre. The person appointed will be responsible for the use of microelectronics in the teaching of children with special educational needs, and will be a third member of a team planning and running courses for teacher training in the use of microelectronics across the curriculum of special education, running an information service and dealing with all users of the Centre. Unsuccessful candidates will be invited to submit a curriculum vitae and a list of references. Successful candidates must be car drivers with current licence.
 The post is offered on a fixed term contract for 1 year.
 Salary within the L11 scale £8,076-£12,945.
 Secondment may be possible for serving teachers.
 For further details and an application form to be returned by 31 March 1988, please contact the Personnel Office, Bristol Polytechnic, Coldharbour Lane, Frenchay, Bristol or ring Bristol 656261 ext. 216 or 217.

Please quote reference number L/168 in all communications.
 Avon County Council is an Equal Opportunities Employer.

North East London Polytechnic

CAREERS ADVISER S6

Applications are invited from graduates or any other person for the above post. The College offers sandwich courses leading to a BSc in Textiles with Clothing Studies, a College Associateship in Clothing Studies at professional level, a Postgraduate Diploma course and higher degree research.
 POST 1. Lecturer in Clothing Technology with specialisation in pattern construction and garment assembly in the area of light clothing.
 POST 2. Lecturer in Clothing Technology with specialisation in pattern construction and garment assembly applied to men's and ladies' tailored type garments.
 POST 3. Lecturer in Clothing Production - experience required in Production Management and the use of modern technology. Experience in the use of computer applications an advantage.
 Applicants should be preferably well qualified at degree or A.C.F.I. level, with appropriate industrial experience. One of the posts could be at Senior Lecturer A level for a person with the appropriate teaching experience. Appointments to commence 1st September 1988.
 Salary Scale: Senior Lecturer A: £13,710 - £17,280 (Bar £15,219)
 Lecturer A: £9,321 - £14,718 (Bar £13,710)
 Further details and application forms available from: The Principal, Scottish College of Textiles, Galeshield, Selkirkshire TD1 3HF (Telephone 0896 3381).
 CLOSING DATE FOR RETURN OF COMPLETED APPLICATION FORMS THURSDAY, 20TH MARCH, 1988.

Colleges of Higher Education

Nene College Northampton

Faculty of Art and Design

Senior Lecturer in 3 Dimensional Design (Course Leader)

Applications are invited from suitably qualified and experienced persons for the above appointment.
 Applicants should have a working knowledge of all areas of 3 Dimensional Design and be a specialist in some vocational aspects of it, such as display/exhibition design or product design etc.
 In addition recent relevant industrial and educational experience is required.
 This post presents an unusual and challenging opportunity for direct involvement in the identification and development of a new course in 3 Dimensional Design.
 Salaries in accordance with the Burnham (FE) Report.
 Further details and application form may be obtained on receipt of a SAE from The Dean, Faculty of Art and Design, Nene College, St George's Avenue, Northampton NN2 6JL. Telephone: 0804 714101.
 Completed applications to be returned by 7th April 1988.

Manchester Polytechnic

Department of Mechanical Production & Design Engineering

LECTURERS II (2 POSTS) ENGINEERING DESIGN MANUFACTURING ENGINEERING

Applications are invited from graduates engineers with at least a 2nd class honours degree in Mechanical Engineering, Design Engineering, Manufacturing Engineering, or a related discipline. Successful applicants will be expected to contribute to the teaching of design and manufacturing engineering in the following fields: System Design, Design Aided Design, Design for Manufacture, Design for Assembly, Computer Aided Design, Computer Integrated Manufacturing.
 Successful applicants will be expected to contribute to the teaching of design and manufacturing engineering in the following fields: System Design, Design Aided Design, Design for Manufacture, Design for Assembly, Computer Aided Design, Computer Integrated Manufacturing.
 Salary Scale L11 £8,076-£12,945.
 For further particulars an application form should be sent to the Director of Education, Manchester Polytechnic, 100 Oxford Road, Manchester M6 9PU.

City of London Polytechnic

SENIOR LECTURER IN PRINTMAKING AND/OR COMPUTER GRAPHICS

We require to appoint a senior lecturer in printmaking and/or computer graphics. The successful candidate will be responsible for the design and development of a teaching programme in these subjects.
 Candidates must have the ability to teach their specialist subject to a high level.
 Full time salary: £18,286 p.a. to £19,084 p.a. (plus London weighting).
 For an application form and further details the staff to contact: Mr. J. L. Smith, Lecturer in Printmaking, City of London Polytechnic, 117, Broad Street, London EC2 3JL. Telephone: 020 7463 8953.
 The Polytechnic is an equal opportunities employer.

PLEASE MENTION THE T.H.E.S. WHEN REPLYING TO ADVERTISEMENTS

Colleges and Institutes of Higher Education continued

LA SAINTE UNION COLLEGE OF HIGHER EDUCATION SOUTHAMPTON

Head of the School of Chiropody

On 1 September 1987, as a joint venture with the Wessex Regional Health Authority, a new School of Chiropody will be established at La Sainte Union College of Higher Education.
 The College is seeking to appoint a Head of the School of Chiropody. The appointment will be at the Senior Lecturer/Principal Lecturer (Burnham F.E.) level depending on the qualifications and experience of the successful applicant. The College wishes to make an appointment to the post with effect from 1 September 1988.
 Further particulars may be obtained from The Principal, La Sainte Union College of Higher Education, The Avenue, Southampton SO9 5HB (telephone Southampton 228781). Closing date for applications: 21st March 1988.

NEW ENGLAND COLLEGE ARUNDEL, SUSSEX

New England College seeks nominations and applications for Director of Admissions: British Campus. The position carries responsibility for on-site management of the British Campus Office of Admissions and for the recruitment of students primarily from Europe, the Middle East and North Africa for both the British Campus in Sussex, England and the American Campus in New Hampshire, USA. The successful candidate must have a Bachelors Degree from the significant work experience in a US accredited institution of higher education. The preferred candidate will have a graduate degree and admissions recruitment experience in an American institution. Familiarity with the recruiting region is also preferred. Must be able to travel extensively.
 Letter of interest and curriculum vitae along with names, addresses and telephone numbers of three referees must be posted by 21 March 1988 to Dr E. C. Nummela, Director, New England College, Arundel, Sussex, BN18 0DA, England.

WESTMINSTER COLLEGE OXFORD

PRINCIPAL LECTURER IN PRIMARY EDUCATION

(Burnham FE Scale £14,013 - £17,619)
 The College intends to appoint with effect from 1st September 1988, a suitably qualified person to take responsibility for its role in primary education, 5-12 age range. The successful candidate will lead a team of staff and teachers involved both with courses for ITT (B.Ed. and PGCE), and a large, innovative INSET programme, including research students.
 Further details are available from the Principal's Secretary, Westminster College, North Hinksey, Oxford OX2 9AT, telephone number Oxford (0805) 247644. Final date for applications is Wednesday, 28th March 1988.
 This is a second advertisement; all previous applications will be considered.

EDGE HILL COLLEGE OF HIGHER EDUCATION

SENIOR LECTURER IN EDUCATION (re-advertisement)

Applications are invited from qualified and experienced teachers to teach, co-ordinate and develop courses concerned with multi-cultural and racial issues within initial and in-service teacher education programmes.
 Salary Scale: £11,958 - £14,046 (Bar) - £15,045
 Lancashire County Council is an equal opportunity employer.
 Further particulars and application forms, returnable by 14th April, are available from the Secretary to the Deputy Director, Edge Hill College of Higher Education, St. Helena Road, Ormskirk, Lancashire L36 3AP. Tel. Ormskirk (0695) 78171 Ext. 294.

SGIHE SOUTH GLAMORGAN COUNTY COUNCIL

SOUTH GLAMORGAN INSTITUTE OF HIGHER EDUCATION CARDIFF

RE-ADVERTISEMENT DEAN OF FACULTY OF TECHNOLOGY - GRADE VI

To commence duties as soon as possible. Due to the promotion of the present postholder to a principalship, applications are invited from well qualified and experienced graduates in Engineering. The Dean's function includes the oversight of a number of departments and responsibility for a main centre within the Institute. Previous managerial experience in higher education desirable.
 SALARY SCALE: £18,615 - £20,511 p.a.
 Further particulars and application forms may be obtained from the Personnel Officer, South Glamorgan Institute of Higher Education, Cyncoed Centre, Cyncoed Road, Cardiff CF2 6XD; Telephone Cardiff (0222) 551111, Extension 3362. Completed application forms should be returned within fourteen days of the publication of this advertisement.
 Applications are welcomed from suitably qualified people regardless of their sex, marital status, race, religion, colour or disability.

WEST GLAMORGAN INSTITUTE OF HIGHER EDUCATION SWANSEA

RE-ADVERTISEMENT DEAN OF FACULTY OF ART AND DESIGN

(Grade VI: Salary £18,615 - £20,511)
 A vacancy has occurred for the Deanship of Art and Design as a result of the promotion to an Associate Principalship of the present post holder.
 The Faculty is the leading centre in Wales in vocational Art and Design and offers a wide range of courses in Art, Design, Ceramics and Photography, as well as options in the BA and BEd degrees.
 Applications are invited from candidates who are well qualified academically and professionally.
 Further details and an application form are available from: The Principal, West Glamorgan Institute of Higher Education, Townhill Road, Swansea SA2 0UT. Tel: (0792) 203482.
 Closing date 17th March, 1988.

Highland EDUCATION DEPARTMENT INVERNESS COLLEGE OF FURTHER AND HIGHER EDUCATION

Lecturer 'A' in Electrical and Electronic Engineering

The successful candidate will be concerned with the SCOTVEC Higher National Diploma and Higher National Certificate studies and will be responsible for the teaching and development of Digital and Analogue Electronics and Computer Technology up to the final year levels. An appropriate Degree and/or Chartered Engineer status along with relevant industrial experience. Applicants direct from industry are welcomed. Assistance towards removal costs is available. Salary will be pro-rata to the Lecturer 'A' scale with pro-rata for relevant experience.
 Lecturer 'A' Salary Scale: £9,321 - £13,710/14,718
 Application forms are available from the Director of Education, Highland Regional Council, Regional Buildings, Glenquhar Road, Inverness, IV3 9PX. (Telephone Inverness (0446) 254121 Extension 363) to whom they should be returned no later than Friday 21 March, 1988.

For details of advertising in The THES please contact Sue Peplow on 01-253 3000 Extn. 226

Adult Education

Cambridgeshire College of Arts and Technology

Equal Opportunity Employer
 Department of Science
LECTURER I IN COMPUTING
 Required from 1st September 1988. Candidates should have an honours degree in an appropriate discipline or equivalent appropriate computer/industrial experience. The successful candidate would be responsible for the teaching of computer systems but would also be expected to contribute to the overall teaching of computing. Teaching would be on a variety of courses in the HEC HNC/Computer Studies.

A suitable appointment would be encouraged to follow research interests with a view to obtaining a higher degree. Opportunities for consultancy exist.
 Salary Scale L11 £8,076-£12,945.
 £11,247 starting point or existing qualifications and experience in framework of equal opportunities and anti-racism policies. Applications from women and/or members of ethnic minorities welcome.
 Both posts: Burnham, Lecturer Grade II: £8,076-£12,945 plus £1,038 London Allowance.

PLEASE MENTION THE T.H.E.S. WHEN REPLYING TO ADVERTISEMENTS

General Vacancies

Appointment of Director-General

The Board of the British Council invites applications for the post of Director-General, which falls vacant in the summer of 1987. The Director-General is the chief executive of the Council. The post is open to serving staff and outside applicants, men or women.
 The Council's status is determined by its Royal Charter. Its objects are to create an enduring understanding and appreciation of Britain overseas, through cultural, technical and educational co-operation. In developing countries most of the work is in the form of educational aid. The Council is represented in eighty-two countries overseas and has a staff of 4,200. The annual budget, including educational aid programmes administered on behalf of the Overseas Development Administration and others, exceeds £200 million.

Applicants should have substantial administrative experience, independence of mind combined with a willingness and ability to speak for the Council to the media or within Whitehall, the ability to establish relations of mutual confidence with Government departments, organizations and individuals with whom the Council works, both at home and overseas, and a wide knowledge of British culture. The post involves extensive travel.

The appointment will be for an initial period of five years. The normal retirement age for senior Council staff is 60. The salary of the post is equated to and kept in line with that of a Second Permanent Secretary in the Civil Service, which is currently £55,000 a year.

The closing date for applications is Friday 2 May 1988. For further details and an application form, please write to the Secretary, The British Council, 10 Spring Gardens, London SW1A 2BN, marking the envelope 'DG'.

The British Council

